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REPORT,

OF THE

ROYAL SOCIETY

OF

TASMANIA,

FOR

1881.

TASMANIA:
PRINTED AT THE "MERCURY" STEAM PRESS OFFICE, HOBART.

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THE responsibility of the statements and opinions given in the following papers, and discussions, rests with the individual authors; the Society as a body merely places them on record.

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PROCEEDINGS.

APRIL, 1881.

A monthly evening meeting of the Society, the first of the present session, was held on Tuesday, the 12th April, His Excellency Sir John Henry Lefroy, K.C.M.G., F.R.S., the President, in the chair.

Mr. Bernard Shaw, who had previously been nominated by the Council, was balloted for, and declared duly elected as a Fellow of the Society.

The Honorary Secretary (Mr. Barnard) brought forward the usual returns, viz.:—

1. Number of visitors to Museum during March—On Sundays, 558; on week days, 940; total, 1,498.
2. Ditto to Gardens, total 4,293.
3. Plants and seeds received at Gardens, March.
4. Books and Periodicals received.
5. Presentations to Museum.

Meteorological Returns.

1. From the Hobart Marine Board. Tables from Bruni Island Lighthouse for January, February, and March; Swan Island for ditto; Goose Island for January; King's Island for ditto; and Kent's Group for ditto.
2. From Mr. D. C. Purdy, observations taken at Macquarie Harbour during January and February.
3. From Mr. Roblin. Tables of Results of Meteorological Observations taken at the Lighthouses, etc., on Tasmanian Coasts during 1880, compiled from monthly returns furnished by the Hobart Marine Board.

Time of leafing, flowering, and fruiting of a few standard plants in the Botanic Gardens during January, February, and March:—

January 10. Veronica angustifolia in full flower.
,, 12. Jargonelle Pear ripe.
,, 14. Moore Park Apricot ripe.
,, 22. Grevillea robusta in full flower.
,, 28. Black Mulberry commencing to ripen.
February 8. Kerry pippin Apple commencing to ripen.
,, 14. Windsor Pear do. do.
,, 17. Bon Chretien Pear do. do.
,, 18. Greengage Plum do. do.
,, 27. Ash commencing to shed seed.
,, 28. Sycamore do.
March 6. Seckle Pear commencing to ripen.
,, 8. Tips of Hornbeam turning brown.
,, 10. Coe's Golden Drop Plum ripe.
,, 16. Tips of Elm turning yellow.
,, 18. Horsechestnut leaves turning brown.
,, 24. Ash leaves commencing to fall.
,, 27. Oak leaves do. do.

The presentations to the Museum were as follow:—

1. From Mr. A. K. Johnston, Townsville, North Queensland. Specimen of Sponge from the Great Barrier Reef. Two bottles containing Lizards, Centipedes, etc., from Etheridge River. Shell of Freshwater Tortoise. Two Boomerangs made by natives of North Queensland.

2. From Mr. Robert Henry. Skeleton of a Wombat from a sandbank near Low Heads.

   [These bones were exposed by the action of the wind cutting through the sandbank, which must have been at least 25ft. high where it covered them.]
3. From Mr. Wm. Tarleton. Bones of recent Marsupial Animals, etc., from a calcareous deposit on Kent's Group, Bass' Straits.

   [The bones were found in a cavity 50ft. in depth, washed out by floods, and situated 600ft. above sea level.] Specimens of *Helix Simsoniana* from the same locality.
4. From Mr. J. Moore. Fragments of bone, teeth, etc., from a Tertiary deposit, exposed by blasting at the Alexandra Battery, One-Tree Point. [These specimens are referred to in Mr. Johnston's paper, on the condition of the Estuary of the Derwent during the tertiary period, read at the same meeting.]
5. From Mr. H. Wright, Glenorchy. Head of Pelican *(Pelecanus conspicillatus)* from George's Bay.
6. From His Excellency Sir F. A. Weld, K.C.M.G. A collection of Bird Skins (14), and three nests of Weaver Bird *(Ploceus baya)* from Singapore.
7. From Captain Boon, barque Mary Blair. Fragment of an earthen vessel from the ruins of the Castle of Henry IV., at Dieppe, France. Specimen of Granite broken from Cleopatra's Needle.
8. From Mr. Finlayson. A Modern Greek Copper Coin.
9. From Mr. G. A. Power, Ross. Specimen of "Native Bread" *(Mylitta Australis)*, which, when fresh, weighed 25lbs.
10. From Mr. Ormond FitzGerald. A White Hawk *(Leucospiza Novæ Hollandiæ)*.
11. A collection of British Birds' Eggs, from Mr. W. R. Stephens.

[Mr. E. D. Swan drew attention to this valuable donation. The collection contains more than 500 eggs and about 150 species, many of them of rare occurrence in the British Isles. As they were all procured by Mr. Stephens himself, the various specimens can be properly identified. Should, as has often been proposed, the introduction of many of the English birds into this colony be carried out, some legislation for their protection, especially during the breeding season, would be necessary. This collection would then be of very great use in making the eggs of the protected birds familiar.]

12. From Mr. S. H. Wintle. A sample of the so-called Mineral Wax *(Zietrisikite,* Dana) from Utah, America. Section of Pepper Tree *(Drimys aromatica)* from George's Bay. Specimens of Sandstone and Slate in contact with Granite, from George's Bay.

[In reference to this presentation, Mr. Wintle remarks :—"For a long time the question of the age of the granite so extensively developed in the stanniferous districts of the North-east Coast of this island has been one of much interest for me. My efforts to obtain a clue to that age had been unrewarded till about three years ago, when, near the head of the Scamander River, I picked up a specimen of slate in contact with granite. (See specimen No. 1.) Not succeeding in finding the parent rocks in contact, I had to be content to wait till I could obtain further evidence of what I conceived to be the facts of the case, viz., that the granite of this region was eruptive, and consequently of more recent age than the associated sedimentary rocks of older palæozoic date. The missing link in the geological chain was supplied about six months ago, through blasting operations being carried on in the creek of the Saxelby tin claim, seven miles from George's Bay. Here, then, was brought to light the further evidence required to support the conclusions at which I had arrived from an examination of No. 1 specimen, in obtaining the granite in contact with sandstone transmuted more or less at the point of contact. (See specimen No. 2.) In No. 1 specimen it will be seen that the slate has been altered to no small extent by the granite, and that there has been an interchange of particles as though the slate had been rendered soft or plastic by the heat of the eruptive rock under great pressure; while in No. 2 specimens the sandstone has been changed at the point of contact into quartzite by fusion of the silicious particles, the result of the same agency. In the Ringarooma district, I have since found examples of the same character, *i.e.*, granite with altered sandstone attached. Here, then, is to be seen good evidence of the granite being of later origin than the stratified formations associated with it. But there is no evidence, that I have seen, of the precise geologic age during which the granite made its appearance, nor have I succeeded in discovering any palæontological remains in the sedimentary rocks of the districts in question that would enable the geologist to decide whether they were either upper or lower Silurian or still older Cambrian systems. In New South Wales there are Devonian granites, according to the late Rev. W. B. Clarke, if I quote that geologist correctly, and as there is much in common with the Tasmanian formations, it is not unlikely the granite under consideration may be referable to the same epoch. This granite having burst through and displaced the older palæozoic strata, has in turn been erupted by the greenstone and basalt. Striking examples of this are to be seen in the Fingal district, where greenstone caps the granite, while in most of the higher hills in the vicinity of Thomas' Plains basalt is the capping rock of the granite. Precisely the same conditions obtain at Mount Bischoff of the granite erupting, displacing, and altering at point of contact the older palæozoic sedimentary formations; and when other analogous conditions are taken into consideration, it is quite possible that the granitoid formations of that part of the island owe their origin to the same period as these of the East Coast."]

13. From the Rev. George Brown, Sydney. Two carved wooden Masks, worn by the Natives of New Ireland in their dances.
14. *a* From Mr. James Barnard. A miniature Silver Medal, struck at the Mint in commemoration of the Melbourne Exhibition, having the words "Melbourne International Exhibition, MDCCCLXXX," encircling the Queen's Head, and on the obverse the motto "Vitam excoluere per artes."
    b Sample of Victorian Coal from Cape Patterson, 80 miles from Melbourne, taken from the "Queen Seam," 4ft. thick. Distant 18 miles from the shipping place. With a printed description and opinions of the Press. From Mr. J. S. Butters, Melbourne.
    c Coloured view of the Island of Ovalau and the Town of Levuka, Fiji. From the same gentleman.
    d Sample of Alluvial Tin, from Aberfoyle, Avoca, received from Mr. F. A. Padfield, Campbell Town.
    e Sample of Tin Stone from the lode of the Great Extended Pieman River Co. From the same gentleman.
15. From Mrs. W. Murray. Specimen of the Indian Minah *(Acridotheres tristis)*, prepared and mounted.
16. From Mr. E. D. Swan. Specimen of Shell *(Cassis rufa)*, with cameo cutting.
17. From Mr. James Simpson. Four Granite boulders, remarkable for their almost perfectly spherical form, from Thomas' Plains.
18. From Mr. Wm. Exton, Oatlands. Specimen of the Grey Flying Opossum *(Belideus sciurus)*.
19. From Dr. Macfarlane, New Norfolk. Specimen of the Australian Crane *(Grus Australasianus)*.
20. From Mr. W. H. Burgess, M.H.A. Specimens of Auriferous

Quartz from the "New Chum," "West Chum," and "Golden Era" companies claims, Lefroy; and Tasmania Co., Beaconsfield. Tin ore from Cumberland Co., West Coast; and from Ben Lomond Co., Ben Lomond.

21. From Mr. C. C. Nairn. Specimen of Fossil Wood, from railway cutting, Jerusalem.
22. From Masters G. Stewart and B. Edwards. Nests and Eggs of Tasmanian Birds.
23. From Mr. R. B. Sheridan, Maryborough, Queensland. Specimen of the peculiar fish, *Ceratodus Forsteri*, from the Burnett River.
24. From Mr. Terry, Lachlan, New Norfolk. A Cormorant *(Phalacrocorax carboides)*, unusually marked.
25. From His Excellency Lieut.-General Sir J. H. Lefroy, C.B., K.C.M.G., F.R.S. A handsomely framed portrait of Admiral Sir James Ross, R.N. Also, a specimen of a fossil *(Sanquinolites Etheridgei?)* from the excavation at the New Battery, Kangaroo Point.
27. From Mr. T. Stephens. Specimen of *Eucalyptus cordata.*

[In reference to specimens of *Eucalyptus cordata*, which had been forwarded to the Museum by Mr. Richard Hill, of Hospital Bay, and were on the table for the inspection of the Fellows, Mr. STEPHENS remarked that this interesting tree, discovered and described long ago, had been lost to sight for more than forty years. It was originally reported as a denizen of Recherche Bay by the French expedition under Labillardière; and long afterwards, in Sir John Franklin's time, it was found by Sir Joseph Hooker and the late Mr. Ronald Gunn "in the Huon district," no precise locality having been recorded. From that time to the present it appears to have eluded the search of botanists; and it was only in October last that, in answer to repeated enquiries, specimens were at last obtained from Recherche Bay, but without flower or fruit. A few weeks later it was found by Mr. Hill, on the Huon road, probably on the same spot where it was last seen.] Shortly after the date of this communication *Eucalyptus cordata* was found by Mr. Stephens and Mr. Abbott on the foot hills of Mount Wellington near the Huon road, within five miles of Hobart.

28. From Mr. C. E. Beddome. Specimens of two new Marine Shells *(Delphinula Johnstoni, and Leda Lefroyi)*, dredged off Three Hut Point, D'Entrecasteaux Channel, with descriptive notes.

Mr. STEPHENS said that the Royal Society could not meet for the first time since the death of the late Mr. Ronald Gunn without paying a passing tribute (a more formal record being reserved for a future occasion) to the memory of one whose name was intimately associated with its earliest history. From the time of his arrival Mr. Gunn's name appears associated with every early attempt to cultivate a knowledge of the natural products and resources of the colony: in the department of Botany he was one of the first pioneers, and for many years stood almost alone. As a genial and kindly companion and friend, ready at all times to place his stores of general and special information at the service of any one interested in his favourite studies, he would long be remembered by those who had, if only for a brief period, the advantage of his acquaintance; while as an explorer of some of the wildest parts of Tasmania, at a time when settlement in the north-western and western districts had not yet begun, he had rendered important service to the colony, and had had few to rival him since for indomitable energy and fertility of resources. As one of the founders of the Royal Society his name would always be held in honour in this place.

His EXCELLENCY, the President, then read the opening address.

Mr. R. M. JOHNSTON, F.L.S., read an elaborate and carefully prepared paper, illustrated by coloured diagrams and a map, entitled "Notes showing that the existing Estuary of the Derwent was occupied by a Fresh-water Lake during the Tertiary Period."

The PRESIDENT having invited an expression of opinion on the subject of Mr. Johnston's paper, Mr. STEPHENS said that if there appeared to be any hesitation on the part of members present in volunteering remarks, it was not caused by any want of appreciation of the admirable paper which had just been read, but rather by the evident impossibility of properly discussing the numerous questions of interest which had been brought forward. The formation so fully described by the author of the paper had frequently been brought under the notice of the Fellows in former years, and, among others by one whose presence at their meetings would long be missed, the late Mr. Morton Allport, who was intimately acquainted with the surrounding district; but these had been chiefly conversational discussions, of which no record had been preserved, and the Society was greatly indebted to Mr. Johnston for having presented in a concrete form so much interesting matter for future study and consideration. He (Mr. Stephens) was inclined to regard the tertiary deposits in the lower part of the Derwent basin rather as of estuarine and fluviatile origin, with land springs, which he thought were the chief agents in the formation of the beds of travertin at Risdon, and in the suburbs of Hobart, and by the process which is still going on in the formation of similar deposits in various parts of the island. Of the existence of a series of lakes in past times, far up the valley of the Derwent, which had been successively drained by erosion, and had exposed the remains of tertiary beds in the ancient valleys, there could be no doubt. These lakes indeed belonged to a later age, but there was nothing at present known which could invalidate the general conclusion so carefully stated by Mr. Johnston.

A vote of thanks to His Excellency for his opening address, and to the authors of the papers read, as well as to the various contributors to the Museum, closed the proceedings of the meeting.

MAY, 1881.

The monthly evening meeting of the Society was held on Tuesday, the 10th May, Mr. Justin Browne in the chair.

Mr. BARNARD (Hon. Sec.) laid on the table the usual returns for the past month, viz.:—

1. Number of Visitors to Museum, on Sundays 356; on week days 685; total, 1,041.
2. Ditto to Gardens, 4,385.
3. Books and Periodicals received.
4. Presentations to Museum.
5. Time of leafing, flowering, and fruiting of a few Standard Plants in the Botanic Gardens during April:—
   12th. Common Elm, leaves commencing to fall.
   14th. Coe's late red Plum ripe.
   15th. Chinese Chrysanthemums commencing to flower.
   24th. Mountain Ash leaves commencing to fall.
   28th. Seeds of Hornbeam ripe.
   30th. Black Mulberry leaves falling.
6. Meteorological Returns.—From the Marine Board, tables for April, from Bruni Island, Swan Island, and Mount Nelson; Goose Island for February and March.

The presentations to the Museum and Library were as follows:—

1. From Mr. A. Wilkins, Hobart. An albino variety of the Brush Kangaroo *(Halmaturus Bennettii)*, from Spring Bay.

2. From Mr. Richard Chick. Sections of five telegraph cables from India, Egypt, the Balearic Isles, the Mediterranean, etc.
3. From Mr. R. M. Johnston. Specimens of lignified Pine, from the deep lead auriferous drifts, Back Creek, Tasmania.
4. From His Excellency Sir J. H. Lefroy. Specimen of Marble from Beaconsfield.
5. From Mr. R. B. Dyer. Specimens of Crustaceans and Echinodermata from Southport. Specimens of the foliage and fruit of the so-called "Pepper Tree" *(Drimys aromatica)*. Eggs of Mutton Bird *(Nectris brevicaudus)*, and Penguin *(Spheniscus minor)*.
6. From Mr. Rayner. Specimens of Iron Ore from the New Norfolk District.

Library.—From Mr. H. J. Buckland.—1. Buckland's "Geology and Mineralogy," 2 vols., 1837 (Bridgewater Treatise). 2. "Reliquiæ Diluvianæ," 1 vol., 1823, by the same author.

The SECRETARY read a paper by Baron von Mueller, K.C.M.G., M.D., F.R.S., entitled "Suggestions for an extended elucidation of the Plants of Tasmania."

The CHAIRMAN said that it would be seen that Baron von Mueller was desirous of getting information upon the botany of Flinders Island; he had already applied to the Society to assist him in this direction, and steps had been taken which would probably result in local assistance being procured in the way sought by the Baron, if not for Flinders, at least for Clarke's Island, and probably the botany of both islands is nearly the same.

Mr. R. M. JOHNSTON hoped that the local collectors in Tasmania would further the object of the learned phytologist. It was very desirable that the natural history of the Cryptogams of Australia should be brought up to the same state of perfection as the other divisions of the "Flora Australiensis." Mr. Bentham committed the completion of this onerous task to the illustrious Baron, and he (Mr. Johnston) was glad that there was now a probability of its being carried out.

Mr. STEPHENS read notes on a species of *Eucalyptus (E. hæmastoma)*, not hitherto recorded in the Flora of Tasmania, with its identification by Baron von Mueller. This tree is commonly known as the Gum-topped Stringy Bark.

Mr. JOHNSTON was glad that Mr. Stephens had devoted his attention so closely to the study of our Eucalypts, for it was only by a close special study of some particular family or group that we could now hope to improve or add to our existing knowledge. The proper classification of the Eucalypti is a very difficult matter, and the exact determination of closely allied species is rendered still more perplexing on account of the extreme variability due to local environments. Mr. Johnston gave an instance of this variability by reference to *E. amygdalina* as it grows in the Domain, in comparison with the same species as it grows on the hills around Launceston.

Mr. DOWDELL remarked that the timber of the Gum-topped Stringy Bark was known to be of a very superior quality—in fact, second only to that of the Blue Gum—and always commanded a ready sale in the market. The wood was easily distinguished from that of the Swamp Gum by the greater firmness of its grain.

Mr. GRANT expressed his surprise at learning that the Gum-topped Stringy Bark—the subject of the paper—had not been previously described by botanists, since it had long been well known in commerce, and was a valuable timber. He had been supplied with a large number of sleepers of this wood by Mr. Oates, whose mills were near Victoria, Huon River, and, therefore, the trees must abound there. The timber could readily be recognised by those accustomed to notice sawn woods. It had a different shade of colour to stringy bark, and to white or swamp gums, and also a different grain, which more nearly resembled that of blue gum. It was a close, heavy timber, remarkably clear and free from knots, which, independent of the colour, distinguished it from blue gum, that otherwise it most resembled. Mr. Grant had not observed the tree growing, or noticed its wood in any large quantity, in the Midland districts, and, therefore, as it was common about the high lands, he thought it probably preferred a more humid atmosphere than obtained in the interior of the country along the course of the railway. There was also another apparent variety which he had heard called "celery-topped" gum, but which was probably a slightly modified form of the gum-topped stringy bark, since it frequented the same habitats.

The SECRETARY read a paper by Charles E. Barnard, M.D., etc., etc. "On Auriferous Country and Gold-bearing Rocks."

Mr. STEPHENS said that the paper which had just been read indicated much thoughtful study on the part of the author, who evidently took a lively interest in his subject. He did not quite understand whether the author intended to mean that the views which he expressed as to the surface indications of the presence of gold were to be taken as universally applicable ; but it would be improper to attempt to discuss in detail a paper covering such a wide range after only hearing it once read, and he would only venture to criticise one point which was too important to be passed without notice. The relations of intrusive rocks, especially those of granitoid character, to the primary strata had furnished matter for innumerable pamphlets and papers ; but it might be sufficient to say that although the granite was often found as a disturbing element in Silurian districts, it was clearly proved to have formed no part of the agencies which had produced those remarkable flexures and contortions which are special characteristics of the primary rocks all over the world, and which were attributable to forces operating on a much wider scale. This question, however, would in itself furnish matter for a lengthy paper.

Mr. JOHNSTON complimented Dr. Barnard on the very interesting sketch he had given of the wonderful results produced by the discovery of gold in Australia, and upon the very faithful picture he had given of the principal features of gold-bearing rocks and drifts. Only in regard to some of the minor points, touched upon incidentally, could he desire to offer any additional comment in the way of qualification. With respect to the effect produced by intrusive rocks, Mr. Johnston inclined to the view taken by Mr. Stephens, viz., that only to a trifling extent could the disturbed condition of the auriferous rocks be attributed to the immediate influence of the intruded rocks. Mr. Johnston stated that Mr. Mallet's theory was best in accord with facts. Mr. Mallet attributes the crushing and crumpling of the surface rocks principally to the secular cooling of the earth, together with gravitation. The cooling of the earth, at a greater rate near the surface, must have caused at first violent contraction, and consequently violent rifts, crumplings, and local heat. To the latter may be attributed the chief immediate cause of the principal masses of molten eruptive rocks. With respect to the association of certain vegetable remains with our gold drifts in Australia and Tasmania, Mr. Johnston agreed with Dr. Barnard that the knowledge of such association might be useful to the miner as a guide in his search for free gold. Still it should be borne in mind that the vegetation only pointed to the age during which the principal formations were deposited. It might happen, as in the case of the Derwent leaf beds, described by him (Mr. Johnston) on a former occasion, that same vegetation might be associated with a matrix derived from non-auriferous rocks of Upper Palæozoic age. These were incidental matters, however, which did not affect the great value of Dr. Barnard's paper.

The usual vote of thanks having (on the motion of Mr. JOHNSTON, seconded by Dr. PERKINS) been accorded to the authors of the papers read, and to the donors of presentations, the meeting closed.

JUNE, 1881.

The usual monthly meeting of the Society was held on Tuesday, the 14th June, Mr. T. Stephens, vice-president, in the chair.

The following gentlemen who had previously been nominated by the Council were balloted for, and declared duly elected as Fellows of the Society, viz., Messrs. Cecil J. Parsons, Frederick Mace, and Charles C. Nairn.

The SECRETARY brought under notice the following returns for the month of May, viz.:—

1. Number of Visitors to Museum—On Sundays, 476 ; on week days, 610 ; total, 1,086.
2. Ditto to Gardens, total 4,029.
3. Plants and Seeds received at Gardens :—From Mr. C. F. Creswell, Melbourne, Palm seeds from Lord Howe's Island, and 50 plants. From Mr. J. Sangwell, Melbourne, 48 Ferns. From Mr. Wm. Bull, London, 30 packets seeds. From Mr. J. T. Duthie, Superintendent Botanic Gardens, Saharanpur, N.W. Province, India, seven varieties of seeds of Coniferæ. From Mr. J. Latham, Liverpool-street, 30 packets imported seeds. From Baron Ferd. von Müeller, 3 packets seeds.
4. Plants, etc., sent from Gardens :—To Messrs. Shepherd and Co., Sydney, 1 box Bulbs, various. To Mr. C. F. Creswell, Melbourne, 1 ditto ditto. To the Horticultural Gardens, Melbourne, 1 ditto. To Melbourne Botanic Gardens, 1 case of plants and Sphagnum Moss. To Lieut. James, H.I.J.M. ship Riujio, 25 packets seeds. To Captain Fukushima, of the same ship, 50 ditto ditto.
5. Tench supplied :—To the Acclimatisation Society, Geelong, 132 fish.

Meteorological Returns.

1. From the Marine Board :—Tables from Mount Nelson and South Bruny for May.
2. From Mr. D. C. Purdy :—Tables from Macquarie Harbour for March and April.

Time of leafing, flowering, and fruiting of a few Standard Plants in the Botanic Gardens during May, 1881 :—

10th. Medlars commencing to ripen.
21st. *Photinia serrulata*, commencing to flower.
23rd. *Diosma alba*, ditto.
28th. Ailanthus, leaves all shed.
30th. *Spiræa prunifolia plæno*, commencing to flower.

The presentations to the Museum were as follow :—

1. From Mr. H. A. Ward, Rochester, New York:—Skin of fox prepared for mounting. Cast of Upper Silurian Fossil *(Homalonotus delphinocephalus)*.
2. From the Exhibition Commissioners:—Specimens of Minerals, Models of Fruit, etc., etc.
3. From His Excellency Sir J. H. Lefroy, C.B., K.C.M.G., etc. :—A framed portrait of Captain Cook.

The CHAIRMAN exhibited some specimens of the rocks of Port Cygnet, together with rolled pebbles from the drift of the Huon Valley, which had been forwarded to the Museum ; and remarked that the latter were representatives of rocks not now found *in situ* within the settled districts of the south, and that with reference to the question of the auriferous capabilities of Port Cygnet there was not yet much that could be added to the information already communicated to the Society.

The HON. SECRETARY read a paper contributed by Professor R. Tate, Assoc. Linn. Soc., F.G.S., "On Type Species of Tasmanian Shells, unrecorded in the 'Census of Tasmanian Shells.'"

The CHAIRMAN read, "Notes on a species of *Zieria (Z. veronica)*" by Augustus Simson, F.L.S., with its identification by Baron von Müeller.

Mr. E. J. Crouch, M.R.C.S., Eng., read a paper on "The Queen's Domain, with suggestions for its improvement."

A long and animated discussion, in which most of the Fellows present took part, followed the reading of this paper, and many valuable and practical suggestions were brought out. It was ultimately determined, on the motion of Mr. Barnard, seconded by Mr. James Grant, that a committee of this Society, consisting of Mr. Belbin, M.H.A., Mr. F. Abbott, Superintendent of the Botanic Gardens, Dr. E. L. Crowther, M.H.A., Captain Stanley, R.N., Mr. John Swan, Mr. Justin Browne, and Mr. E. J. Crouch, with power to add to their number, be formed to consider the subject in all its bearings, and to confer with the Government as to the best means of contributing to the improvement of the Domain.

The meeting closed with the usual vote of thanks to the authors of the various papers, and the donors of presentations to the Museum.

JULY, 1881.

The monthly evening meeting of the Society was held on Tuesday, the 12th of July; His Excellency, the President, in the chair.

Mr. W. F. Petterd, of Launceston, who had previously been nominated by the Council, was balloted for, and declared duly elected as a Fellow of the Society.

The hon. secretary, Mr. Barnard, brought forward the following returns for June :—

1. Number of visitors to Museum :—On Sundays, 374 ; on week days, 843 ; total, 1,217.
2. Do. to Gardens, 3,495.
3. Plants received at Botanic Gardens :—From Mr. J. Smith, Riddle's Creek, Victoria, 45 varieties of Fruit Trees. From the Horticultural Society's Gardens, Melbourne, one bundle new Fruit Scions. From Royal Gardens, Kew, England, one case of Willow Cuttings. From the Rev. — Codrington, Norfolk Island, one sack of Norfolk Island Pine Seeds.
4. Plants sent from Gardens :—To Rev. M. W. Gilleran, for church grounds, Ouse, 50 plants. To Right Rev. Bishop Murphy, 50 plants.
5. Books and Periodicals received.
6. Presentations to Museum.

Meteorological Returns :—

1. From the Marine Board, tables from Kent's Group Lighthouse for February, March, April, and May; Cape Wickham, do. ; Goose Island, do. for April and May ; Swan Island, do. for May ; Bruny Island, do. for June ; and Mount Nelson, do. do.
2. From Mr. D.C. Purdy, Macquarie Harbour, table for May.

Time of leafing, flowering, and fruiting of a few standard plants in the Botanic Gardens during June, 1881 :—

17th. *Maclaura aurantiaca*, commencing to shed leaves.
20th. Common Privet, ditto.
25th. *Iris alata*, commencing to flower.
28th. *Calycanthus præcox*, in flower.
30th. Black Mulberry, leaves all shed.

The presentations to the Museum were as follow :—

1. From Captain Rapp, barque Italy, Stalactites and Crystals of Carbonate of Lime, from a cavern at Hamelin Bay, West Australia.
2. From Master B. Watchorn, specimens of Tin Ore, etc., from Mounts Bischoff and Heemskirk.

3. From Mr. E. D. Swan, a Black Magpie *(Strepera arguta)*, mounted.
4. From Mr. W. Murray, Glenorchy, a Brown Trout *(Salmo fario)*, caught in the O'Brien's Bridge Rivulet.
5. From Mr. A. J. Taylor, cast of face of Lord Brougham.
6. From the Tasmanian Commissioners, Melbourne Exhibition, 1880-1 :

A. From the Belgian Court, Melbourne Exhibition :--Samples of Cardboard ; two do. of Indigo ; one of Ultramarine ; four do. of manufactured Sulphur ; Iron Carriage, and Spiral Springs ; Specimens of Artificial Marble, samples of Tiles, Slate, etc.

B. From the Victorian Court :—Two Cores from Diamond Drill from Stawell and Creswick, Victoria.

Arsenical Pyrites, from 954 ft. level, Sandhurst (from Sandhurst School of Mines); Burnt Pyrites and Pyrites Tailings (from do.); Phacolyte, with Calcite (from do.) ; Lava Dyke Stone, associated with Garden Gully Reef (from do.)
Iron Ore from Traralgon Creek (from do.)
Do. from Dookie (from do.)
Cobalt Ore, from Walhalla and Alexandra (from do.)
Antimony, Sulphide and Oxide ; Antimony Regulus ; from Ringwood (from do.)
Calcite, from Dookie (from do.)
Lignite, from Lal Lal (from do.)
Mammillated Sandstone (metamorphosed) ; the bounding rock of the Garden Gully Reef (from do.)
Infusorial Earth, from Amherst (from do.)
Crystal Sand, from Brighton Beach, Victoria.

C. From the South Australian Court :—
Pyrolusite, from Tangie, S.A.
Bethangar Copper Ore, two specimens.
Atacamite and Red Oxide of Copper, from Moonta Mine.
Copper Pyrites, from do.
Ditto, from Wallaroo Mine.
Yellow Copper Ore, from do.
Copper Pyrites, from Kurella Mine.
Atacamite, Massive, from Moonta Mine.
Borinite, from do.
Peacock Copper Ore, from Moonta.
Ingot of Smelted Copper, from Wallaroo.

D. From New South Wales Court:—
Kerosene Shale, from Hartley, N. S. Wales.
Lignite, overlying do., N. S. W.
Shale, from Tyer's River, do.
Antimony Ore, do.
Sulphide of Antimony, do.
Asbestos, do.
Ingot of Smelted Tin, N.S.W.
Fibre, from Fiji.
Coffee, from do.
Seed of Sea Island Cotton, from do.

E. From Tasmanian Court :—
Polished Slab of Fossiliferous Limestone, from Bridgewater. Donor, Mr. E. Rayner.
Ditto, from Maria Island. Donor, Mr. R. Robinson.
Mineral Map of Tasmania.
Serpentine, Polished Cube of, locality not stated.
Two Photographic Views of Hobart, framed.

Library. From Mr. J. Barnard. Two copies of Baron von Mueller's work, entitled "Select Extra-Tropical Plants, suitable for Industrial Culture," for Library, and for the use of the Superintendent of the Botanic Gardens.

Mr. Stephens exhibited specimens of a paper-like material used in stereotyping at the office of the *Launceston Examiner*, and one from the establishment of the Hobart *Mercury*. This soft and flexible material has almost universally superseded the use of plaster moulds in stereotyping, and the sharpness of the type cast from it, when properly prepared, is quite remarkable.

Mr. Nowell presented some tables which he had compiled with the assistance of Mr. Langworthy, showing the mean of the observations for the five years, 1871-5, taken at the lighthouses and other coast stations in Tasmania, and published by the Society ; and read some remarks upon the subject, with special reference to the winds in Bass' Straits and the climate of the West and North-West Coasts.

The Chairman remarked that he entirely agreed with the author as to the importance of multiplying registers of the rainfall, the simplest and easiest of all observations, and one which becomes very interesting for comparing different seasons. Probably the amount of rainfall has more to do with the agricultural or pastoral value of different districts than temperature or anything else ; and he had on a previous occasion advocated the employment of the masters of common schools, many of whom would no doubt be very willing to take charge of a rain-gauge, and perhaps of other instruments.

Captain Stanley remarked that he thought there must be something wrong with the figures relating to the pressure of the wind. He believed that those adopted at the lighthouses were guessed by the observers, and not arrived at by the aid of anemometers. It was not the custom in the colonies to use Beaufort's scale. That in use was one common to all the Australasian colonies, and consisted in supposing that the wind ranged in force from 0 to 6, the figure 6 representing hurricane force. Beaufort's scale, or that in common use in the Royal Navy, supposed the force of the wind to be represented by figures, ranging from 0 to 12—0 representing a calm, and 12 a hurricane ; the intermediate figures were judged by the description and number of sails the ship would carry or might be happening to carry at the time, and in relation always to a well-conditioned man-of-war. As regarded private observations, great care would have to be taken by observers, and it would be necessary to know what kind of instruments were used. Aneroids were less trustworthy instruments than marine barometers ; their corrections varied according to their readings ; as, for instance, an aneroid might be perfectly correct when registering a height of 30·50, and much in error at a height of 29·50. This description of barometer would most likely be the one chosen by private observers, as being portable and simple. On board a man-of-war it was only used in conjunction with a marine barometer. With regard to the force of the wind observed at Mount Nelson and Kent's Group being so much lower than at other localities, he thought it might be owing to the fact that easterly winds, which blew during several months of the year, appeared to blow much stronger at sea level. He had noticed when employed in the survey of Bass' Strait that often he had been able to observe with a theodolite comfortably on the summit of a high hill when it was blowing a strong easterly wind at sea level ; in fact, the diminution of the force of the wind was quite noticeable during the ascent.

Mr. Justice Dobson thought it undesirable to publish any meteorological observations with the imprint of the Royal Society unless we were satisfied as to their accuracy. That Mr. Nowell's paper cast a doubt upon the accuracy of the instruments used. That these might be tested when the lighthouses were visited, by procuring a duly regulated barometer and thermometer of the Kew Standard, and by taking these instruments round and comparing with them those used at the lighthouses, the accuracy or errors of which would then be ascertained.

The Chairman remarked that he agreed very much with Mr. Justice

Dobson that it was not desirable to publish the observations taken at the lighthouses. The great value of these observations was to enable meteorologists to know the course of great atmospheric disturbances ; to give information to the Board of Trade and Marine Courts of Enquiry, and to meet exceptional occurrences ; but they are not, and cannot be, made sufficiently complete and accurate to have scientific value ; nor are the observers, however intelligent and willing, sufficiently instructed. There is great danger of adding to the masses of unreliable figures already before the world, which it is almost impossible to discriminate from the good data. At the same time, he thought the Society under an obligation to Mr. Nowell for taking the trouble to examine and adjust these returns, and hoped his remarks would not be taken as depreciating that gentleman's labour ; he could only deal with the figures furnished him.

Mr. Nowell was quite willing, as there appeared to be doubts as to the accuracy of the observations themselves, or of the instruments with which they were made, that the paper should not be published. His object would have been to some extent attained by directing attention to the subject, and by eliciting the information with which they had been favoured by the members who were present. Since he had come into that room he had casually taken up a publication, emanating from the Sydney Observatory, containing a large number of meteorological observations extending over several pages ; and on looking at the prefatory matter, he found that the work was done by the astronomer, with the aid of amateurs whose assistance he had solicited ; and the speaker suggested that something of the same kind might be done here. Meteorological observations had been taken at New Norfolk for a series of years by Mr. W. E. Shoobridge, but they had not been reduced. Work of this kind might, he thought, easily be done by organised co-operation among a few volunteers. He hoped that the discussion which had taken place would be the means of obtaining further information as to the climate of the West and North-west Coasts, a part of the colony which at the present time was exciting so much interest.

[Since the meeting the following interesting observations have been received from Mr. S. B. Emmett, of Circular Head :—" The annual fall of rain here is about 45in., in the most 69in., and least 33in. Mean range of thermometer, 57deg. at 9 a.m. Heaviest gales from N.W. during May, June, and July, always ending with thunder when the rain begins and the wind shifts. Thunder never heard (? when the wind blows from any quarter) from S.W. to E. Barometer rises from S.W. to E. and falls from N.E. to W. Thunder not heard with barometer above 29·60. For the gales from N.W. the barometer falls to 29 to 29·20 on an average. Once, twenty-five years ago, the barometer fell to 28·45. The storms here can be predicted at least 12 hours before greatest pressure. I have seen the barometer fall five-tenths in two hours."]

The proceedings closed with a vote of thanks to Mr. Nowell for his paper, and to the donors of presentations—special reference being made to the large number of specimens contributed by the Tasmanian Commissioners for the Melbourne Exhibition.

AUGUST, 1881.

The monthly evening meeting of the Society was held on Monday, the 8th August ; Mr. T. Stephens, M.A., F.G.S., in the chair.

The following persons were, on the nomination of the Council, unanimously elected honorary Members of the Society, viz.:—

1. Mrs. Charles Meredith, of Launceston, " in recognition of her long efforts to encourage the study of the Natural History of Tasmania, by illustrations both literary and pictorial, in her various and highly-popular publications."

2. Mr. James Smith, of Westwood, Forth, "in recognition of his rare perseverance and remarkable success in the discovery of Tin at Mount Bischoff."

The Rev. J. Wilkes Simmons and Mr. C. J. Atkins, who had previously been nominated by the Council, were balloted for, and declared duly elected as Fellows of the Society.

The Hon. Secretary, Mr. Barnard, brought forward the usual returns for the past month, viz.:—

1. Number of Visitors to Museum:—On Sundays, 437; on week days, 775; total, 1,212.
2. Ditto to Gardens:—Total, 4,470.
3. Plants, etc., received at Gardens:—From Mr. J. B. Walker, plant of *Anthocercis Tasmanicus.* From Botanic Gardens, Melbourne, 53 plants. From Baron von Mueller, bulbs of a species of *Crinum;* seeds of *Macrozamea Mooreii.* From Mr. G. Brunning, Melbourne, 43 Roses. From Mr. J. Latham, 30 Roses. From Miss Solly, 5 packets seeds. From Messrs. Shepherd, Sydney, 45 plants and 24 new varieties of Gladiolus. From Mr. C. F. Creswell, Melbourne, 10 plants.
4. Seeds sent from Gardens:—To Mr. S. Purchase, Parramatta, 50 packets; to Messrs. Shepherd and Co., Sydney, 50 ditto.
5. Periodicals received.
6. Presentations to Library.
7. Ditto to Museum.

Meteorological Returns:—

1. From Marine Board, Tables from Goose and Swan Islands for June.
2. From the Government Astronomer, Melbourne, Record of Meteorological Observations for November and December, 1880.
3. From Dr. Hector, Meteorological Observations taken in New Zealand during the quarter ended March 31; Observations taken at Wellington from February to June, 1881.

Time of leafing, flowering, and fruiting of a few Standard Plants in the Botanic Gardens during July:—

9th. First Snowdrop, in flower.
12th. *Cytisus leucanthus,* commencing to flower.
15th. *Arbutus unedo,* ditto.
18th. *Garrya elliptica,* ditto.
25th. Yellow Crocus, ditto.
31st. White Mulberry, buds bursting.
31st. White Hyacinth, commencing to flower.
31st. Almond, ditto.

The presentations to the Museum and Library were as follow:—

To Museum:—

1. From the Hon. W. A. B. Gellibrand, M.L.C.—A Native Tiger *(Thylacinus cynocephalus).*
2. From Mr. Maurice Weston, per Mr. Curzon Allport.—A White Hawk *(Leucospiza Novæ-Hollandiæ.)*
3. From Mr. Conrad, per Mr. G. Thureau.—An immense Claw of a Crab, from the West Coast.
4. From Mr. W. Aikenhead, Launceston.—Specimen of Copper Pyrites, from the Rising Sun claim, Beaconsfield. Silver-Lead Ore, from Mount Claude.
5. From the Rev. H. E. Drew.—A Young Turtle, from the Great Barrier Reef.
6. From Professor Ward, Rochester, United States.—Twenty-six Casts of Fossils, named and mounted.

To Library :—

1. From the United States Government, per Captain G. M. Wheeler, Corps of Engineers.—Geographical Surveys of the Territories West of the 100th Meridian ; Vol. 2, Astronomy, etc., 4to; Vol. 3, Geology, do.; Vol. 4, Palæontology, do.; Vol. 5, Zoology, do.; Vol. 6, Botany, do.; Topographical Atlas.
2. From the Smithsonian Institution, Washington.—Miscellaneous Collections, Vols. 13, 14, 15, 16, and 17, unbound ; Contributions to Knowledge, Vol. 22 ; Smithsonian Reports, 1877 (3 copies) and 1878.
3. From United States Government, per F. V. Hayden, U.S. Geologist. —Geological and Geographical Survey of the Territories—Colorado and Adjacent Territories, 1876 ; do. Idaho and Wyoming, 1877 ; Bulletin of the Survey, Vol.4, Nos. 2, 3, 4, Vol. 5, No. 1 ; Entomological Commission, 1877, relating to Rocky Mountain Locust ; Bibliography of North American Invertebrate Palæontology ; Catalogue of Publications of the Survey, Report, Vol. 12, 4to, bound.
4. From the Government of Wisconsin, U. States, per T. C. Chamberlin, Chief Geologist.—Geology of Wisconsin, 1873-77, 1 Vol., 4to, bound, and maps.
5. From U. States Coast Survey Department.—Report of Superintendent, 1875.
6. From the Museum of Comp., Zoology, Cambridge, U.S.A., per Alex. Agassiz.—Bulletin, Vol 4, Air-breathing Molluscs, by W. G. Binney, 2 Vols.; Bulletin, Vol. 5, Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10 ; Vol. 6, Nos. 8, 9, 10, 11 ; Memoirs, Vol. 5, No. 2, " Report on Hydroida," by G. J. Allman, M.D., etc.; do., Vol. 6, No. 1, (pts. 1 and 2), "Auriferous Gravels of the Sierra Nevada," by J. D. Whitney ; do., Vol. 7, No. 2, pt. 1, "The Climatic Changes of later Geological times," by J. D. Whitney ; do., " Report on " Fossil Plants of the Auriferous Gravel Deposits of the Sierra Nevada," by L. Lesquereux ; do., " Report on the Florida Reefs," by Louis Agassiz ; Report of Curator of Museum of Comparative Zoology, Harvard College, for 1879-80.
7. From the American Philosophical Society, Philadelphia.—Proceedings, Nos. 101 to 106, January, 1878, to June, 1880. List of Members.
8. From the American Academy of Arts and Sciences.—Proceedings 1877 to 1880 (5 parts).
9. From the United States Naval Observatory, Washington.—Washington Observations for 1869, 1870, 1871 ; Appendix for 1870, 1872, 1874, 1876 ; Tables of Transit Observations, 1872 ; Catalogue of Stars, Appendix 1 ; Researches on Motion of the Moon.
10. From the Essex Institute, Salem, U.S.A.—Bulletin, Vols. 10 and 11 (unbound) ; Historical Collections, Vols. 14, 15, 16.
11. From the Boston Society of Natural History.—Proceedings, Vol. 19, parts 3 and 4 ; Vol. 20, parts 1, 2, 3. Memoirs, Vol. 3, part 1, Nos. 1, 2, 3 ; Occasional Papers, No. 3, 1880.
12. From the American Association for the Advancement of Science. —Proceedings, Vols. 26 and 27 ; 1877, 1878.
13. From Connecticut Academy of Arts and Sciences.—Transactions, Vol. 3, part 2, Vol. 4, part 1.
14. From the "Lick" Observatory Trust, San Francisco.—Report of Observations made on Mount Hamilton, 1880.
15. From the Canadian Institute, Toronto.—Proceedings, 1879, Vol. 1, part 1.
16. From the Chief Signal Officer, Washington, U.S.A.—Daily Bulletins of Weather Reports, November and December, 1874 ; January, 1875, January, February, and March, April and May, 1877.

17. From Her Majesty's Secretary of State for India.—Account of the Great Trigonometrical Survey of India, 1879, Vols. 2, 3, 4 and 5; four vols. 4to.
18. From the Superintendent Geological Survey of India.—Memoirs of the Survey, Vol. 15, part 2; Vol. 17, parts 1 and 2. Palœontologia Indica, Ser. 14, Vol. 1, part 1; Ser. 13, parts 1 and 2; Ser. 10, Vol. 1, parts 4 and 5. Records of the Survey, Vol. 12, part 4, 1879; Vol. 13, parts 1 and 2, 1880.
19. From the Royal Astronomical Society.—Memoirs of the Society, Vol 41, 1879, and Vol. 45, 1880.
20. From the Trustees of the British Museum.– Catalogue of Lepidoptera, parts 3 and 4; Illustrations of Typical Specimens of Coleoptera; part 1, 1879.
21. From the Literary and Philosophical Society of Manchester.—Proceedings, Vol. 16, 1876-7; Vol. 17, 1877-8; Vol. 18, 1878-9; Vol. 19, 1879-80; Memoirs of Society, Vol. 8, 1879.
22. From the Royal Asiatic Society.—Journal, Vols. 11, part 3; 12, parts 1, 2, 3; 13, part 1.
23. From Royal Geographical Society.—Proceedings for February to December, 1880, January to March, 1881 (14 pts.) Journal of Society, Vol. 49, 1879.
24. From the Geological Society.—Quarterly Journal, Vol. 26, Nos. 141 to 144; Vol. 27, No. 145. List 1880.
25. From Zoological Society, London.—Proceedings 1879, part 4; 1880, parts 1, 2, 3; Catalogue of Library; List of Vertebrated Animals.
26. From the Linnean Society.—Journal, Vol. 17, Nos. 103 to 105; Vol. 18, Nos. 106 to 110 (Botany); Journal, Vol. 15, Nos. 81 to 84 (Zoology).
27. From Statistical Society.—Journal, Vol. 43, part 4—12/80.
28. From the Institution of Engineers in Scotland.—Transactions, Vol. 23, 1879-80.
29. Royal Colonial Institute.—Proceedings, 1879-80, Vol. 11.
30. From the Malacological Society of Belgium.—Annals of the Society, Vols. 9 and 11, 1874 and 1876.
31. From Dr. Agnew.—Journal of the Historical and Archœological Association of Ireland, Vol. 5, Nos. 39 to 41.

The Secretary, in reporting the above presentations to the Library, drew the special attention of members to the number and value of the books and publications which had been received from various scientific institutions of America, in exchange for the Transactions of the Society.

The Chairman read a short paper on the question of establishing in the Society's Gardens a "Class Ground," or systematic arrangement to illustrate the classification of plants according to their Natural Orders; with a communication from Dr. Agnew on the subject, and a letter from Dr. Schomburgk, of the Botanic Gardens, Adelaide.

A lengthened discussion followed the reading of this paper, in which most of the Fellows present took part, eliciting many different views of the proposal; and it was ultimately determined to resume the consideration of the subject at the next evening meeting of the Society.

A vote of thanks to the donors of presentations to the Museum and Library closed the proceedings, special reference being made to the very liberal and valuable donations of books received from the United States Government and various scientific institutions in America.

SEPTEMBER, 1881.

The monthly evening meeting of the Society was held on Monday, the 12th September; His Excellency Sir John Henry Lefroy, K.C.M.G. (the President), in the chair.

Messrs. William Crosby, jun., of Hobart, and S. H. Wintle, F.L.S., of George's Bay, who had previously been nominated by the Council, were balloted for, and declared duly elected as Fellows of the Society.

The Hon. Secretary, Mr. Barnard, called attention to the following returns, received since last meeting, viz.:—

1. Number of visitors to Museum during August:—On Sundays, 462; on week days, 700; total, 1,162.
2. Ditto to Gardens, August:—3,985.
3. Plants received at Gardens:—From Messrs. Shepherd and Co., Sydney, 70 plants. From Mr. C. F. Creswell, Melbourne, 10 plants. From Messrs. J. N. Verschaffelt, Ghent, Belgium, 45 Rhododendrons. From Captain Fisher, of the "Loongana," 12 Ferns.
4. Plants, etc., sent from Gardens:—To Mr. C. F. Creswell, Melbourne, one case of plants and seeds. To the Horticultural Society, Melbourne, 12 Peony plants. To Mr. G. Brunning, Melbourne, one case containing plants and seeds. To Mr. John Smith, Riddell's Creek, Victoria, one box of plants and seeds. To Mr. J. Sangwell, Melbourne, one case of plants and seeds. To Botanic Gardens, Melbourne, Pine seeds. To Messrs. Shepherd and Co., Sydney, 12 papers of seeds. To Messrs. Purchase, Parramatta, 12 papers seeds. To Messrs. Vilmorin and Co., Paris, seeds of various Eucalypti. To Messrs. Huber and Co., Hyeres, France, seeds of Eucalypti. To Baron Ferd. von Mueller, Melbourne, a collection of seeds.
5. Books and Periodicals received.
6. Presentations to Museum.

Meteorological Returns:—

From the Marine Board, Tables from Bruny Island, for August; Mount Nelson, for August; and Goose Island, for July and August.

Time of leafing and flowering of a few Standard Plants in the Botanic Gardens, during August:—

20th. Gooseberries commencing to break.
22nd. Horsechestnut ditto.
25th. Elder ditto.
26th. Apricots ditto.
27th. Lombardy Poplar ditto.
30th. Common Elm ditto.

The presentations to the Museum were as follow:—

1. From Mr. C.H. Glover, Franklin. Specimens of Swainson's Antechinus *(Antechinus Swainsonii)*, and the White-footed Antechinus *(Antechinus leucopus)*.
2. From Mr. D. Lewald. Specimen of Molybdenum, crystallised on fire-brick at the Tin Smelting Works, Hobart.
3. From Mr. Justin Browne. Specimen of Silver-Lead ore from Mount Claude.
4. From Mr. Carson, Sandy Bay. A Starling *(Sturnus vulgaris)*.
5. From Mr. E. Lipscomb. A Satin Bower Bird *(Ptilonorhynchus holosericeus.)*
6. From Mr. J. McDonald. Specimen of Iron ore, from Campania.
7. From Mr. T. Stephens. Specimens from the Pink Terrace, Lake Rotomahana, New Zealand.
8. From His Excellency the Governor. A curiously perforated Rock Specimen from Table Cape.

In reference to this presentation, His EXCELLENCY remarked, "I place before the Society two specimens of a compact fine grained sandstone from the beach at Table Cape, which have interested me by their curious condition of perforation, which I have attributed to the action of dropping water.

"These pieces are broken off the dividing walls of an assemblage of shallow, more or less circular basins, which occurs below high water-mark, and covers some hundreds of square feet. The perforations in their original position are vertical. The basins are quite smooth within unless where there is a mound of the same character in the centre, and they remind me of what we always find on the floor of caves where there is much dropping of water charged with carbonate of lime. Pools form on the floor. The water is sent off in circles from the centres of drip. The lime is deposited where it meets a check, and there ridges are built up. In the case of a floor of fine sand, the sand itself would be driven off from centre of drip and deposited in the same way—to be itself, as it consolidated, acted upon by other drip.

"If my conjecture is correct, the land at Table Cape once extended considerably to the eastward, and contained at this spot a large cave, the floor of which remains. I am aware that opinions I much respect attribute the perforations to the action of boring animals; all I can say is, that looking at the isolation of the effect, and its general character, that explanation does not satisfy me.

"The absence of a stalagmitic character about the specimens would be accounted for by the absence of lime in the formation."

His Excellency the President read a paper "On the Magnetic Variation at Hobart, and its change in amount since last determined."

Mr. C. H. Grant observed that this Society, and the public generally, were under a deep obligation to His Excellency for bringing under their notice the very practical matter now occupying their attention. Owing to the system of survey of properties now adopted in this colony, it is certain that the variation in the magnetic deviation must lead to errors and confusion, resulting in much annoyance and litigation. In settled districts where the boundaries were kept well defined on the ground, their correct compass bearings at any time was a matter of comparatively small importance; but in some cases such lines had been originally marked in a very temporary manner, and a surveyor now running them afresh must take different directions, and therefore quite alter the character of the property. As a matter of fact, great difficulty is now constantly felt in reconciling new surveys of separate properties with those made formerly, or with the district maps; and, in despair, the attempt to do so is often abandoned, causing serious loss both of time and money. Now that property had become more valuable and divided, it was time, he thought, that a special survey department should be organised under a Surveyor-General, who would insist upon all surveying operations being conducted on a strictly scientific basis, both in the field and office, and that all the work done should be thoroughly checked and corrected with known points. One of the first matters to engage attention should be the careful determination and official record of the magnetic deviations from year to year in different localities.

Captain Stanley remarked, that in order to determine with accuracy the variation of the compass, a good azimuth compass was a matter of great importance; it was also very necessary to take magnetic bearings on numerous points of the compass; he had made observations while conducting the Marine Survey of Victoria with what was considered a splendid instrument, and yet on certain portions of the arc the bearings were as much as 55min. in error. The only way to obtain the variation with accuracy was by a multiplicity of observations, or by what was known as a "Mean of Errors." In this way it was that Captain Flinders succeeded in fixing his Astronomical positions; he would observe perhaps one hundred lunars, and though various of his results were much in error, the mean was surprisingly exact. In taking observations for the variation of the compass, it was a matter of importance that a situation should be chosen from which all-round observations could be obtained: he had observed the variation at Swan

Island and found it to be (speaking from memory) 10deg. 30min. E. In Melbourne the variation was 8deg. 43min. E., and increasing 1½min. annually. It was most important that the variation of the compass should be accurately determined in different parts of Tasmania, because there certainly was a difference, and the land surveyors always used the Magnetic North, which was likely to lead to inextricable confusion hereafter. He believed that the trigonometric survey of Tasmania had never been completed, and felt certain that a great deal of the work would require to be gone over again, because he knew from experience that the points had not been preserved. In Victoria, stone towers, or strong wooden structures, preserved a centre over which a staff was erected. He was quite sure that all the members present felt grateful to His Excellency for the trouble he had taken in preparing a paper for the meeting, and for calling attention to a manifest deficiency.

Mr. J. M. CLARKE, while thanking His Excellency for calling attention to so important a subject, could add but little to what had been said by such practical men as Mr. Grant and Captain Stanley. His experience in the field was very limited, but speaking from more than 20 years' experience in office work, collating surveys made from the early days of the colony to the present time, he could say that the discrepancies which are perpetually arising must tend to litigation, and are gradually causing great and increasing confusion in the charts of the colony.

Mr. STEPHENS said that though he could not lay claim to much practical or theoretical acquaintance with the business of surveying, or the question of magnetic variation, it had been impossible for him to avoid seeing something of the difficulties which are a necessary consequence of a system of survey conducted on magnetic lines ; and he had been informed upon good authority that serious complications were continually occurring through the want of accord between the representation of surveyed lines on the county maps, and their actual position. If the trigonometrical stations established by the late Mr. Sprent had been carefully maintained, like those of the geodetic survey of Victoria, the difficulty of reconstructing the system of surveys would have been greatly lessened ; but many of them have been utterly destroyed, and probably in no single instance would it be possible to determine accurately the central point of the original station. The prominence given to the subject in the paper read by His Excellency, than whom we could not have a more competent authority, would probably lead to some satisfactory result.

Further discussion followed, in which Mr. Justice DOBSON took part, with the CHAIRMAN and the previous speakers.

Mr. Stephens read "Notes on the proposal for establishing a 'Class Ground' for typical plants, in the Society's Gardens."

Mr. F. ABBOTT stated that the question of the formation of a class ground of typical plants had been before the Council of the Society on previous occasions, the late Rev. W. W. Spicer having been deputed to confer with him on the subject. He (Mr. Abbott) pointed out the difficulties in the way here, and, after going fully into the matter, it was considered that the time had not arrived for commencing such an arrangement. When writing on this matter some years ago he had expressed his opinion that however valuable natural arrangement might be for educational purposes, it was of but little interest to the general public, and except in places where it was utilised for the advancement of botanical science, it had better not be undertaken. In this opinion he was strengthened by a recent visit to the class ground of the Melbourne University, which is claimed as being one of the best kept in the colonies, and must confess to a feeling of disappointment at the appearance of the grounds, which were certainly the reverse of attractive. Not only were plants the most incongruous brought into juxtaposition, but many of them were languishing and others had died out. From Dr. Schomburgk he also learned that the amount of popular appreciation bestowed on the Class Ground in the Adelaide Gardens is very limited indeed. In making the foregoing remarks Mr. Abbott did not wish it to be understood that he was averse to the formation of a class ground when the proper time arrived for so doing. He inclined to the opinion that such an arrangement should always be in connection with a good herbarium, botanical library, and lecture room, as it is only under these conditions that the real utility of a Class Ground becomes apparent. The maintenance of an efficient Class Ground, covering about three acres, would cost at least from £100 to £150 per annum, a much greater expenditure than could possibly be met by the present resources of the gardens. The formation of a collection of Tasmanian plants he considered of primary importance.

Mr. JUSTICE DOBSON spoke in favour of forming a class ground, but on a limited scale, by merely selecting characteristic and typical plants well adapted to this climate; and with regard to the suggestion that a collection of plants indigenous to Tasmania should be formed in the Gardens, he pointed out that it would be impossible to do so owing to the dissimilar conditions of soil and climate, especially in regard to alpine plants.

Mr. ABBOTT explained that he did not object to the formation of class grounds when they could be made of practical utility, but he wished to point out that, as a rule, they were little appreciated by the general public, and that he did not consider the present the proper time to initiate the matter. With regard to size, he could only say he had asked Dr. Schomburgk's opinion as to what he considered essential, and that gentleman had replied that the Adelaide class ground covered two acres, but that the plants had not room to develop, and that he considered three acres little enough for the purpose. The proposal could not be carried out without additional expenditure, for it would be necessary to place the ground in charge of a man having at least some knowledge of the plants contained in it; the staff now employed at the gardens would be too limited to allow the work to be undertaken. In speaking of a collection of Tasmanian plants he referred only to those amenable to cultivation.

Mr. C. H. GRANT believed that the time had hardly arrived for the consideration of the planning out of a class ground after the manner adopted in the Adelaide gardens, the chief difficulty being the already too numerous demands upon Mr. Abbott's time and the want of skilled assistance. However little attention such a ground might require, it would be in addition to what was already far more than fully engaged, and it would be better to devote any available time to subjects of a more popular nature. From his experience of these gardens, at Kew and other places in the Old World, they were of most limited general interest, and this in communities deeply permeated with a taste for scientific subjects, and numbering amongst their members many persons eminent for researches in botany and similar studies. He was not, therefore, surprised to hear Mr. Abbott state that in Melbourne these class gardens were entirely neglected, since neither the educated nor the popular bent of these colonies can be said to be in the direction of science. He felt sure that for one person who would cast a second glance at beds of plants arranged according to their natural orders, at least twenty would examine collections of general native plants, such as ferns or grasses, etc., on a rockery or other convenience made for growing them; and that such collections, if made as complete as possible, would be both interesting and instructive to visitors. He would, therefore, greatly prefer Mr. Abbott's suggestion, rather to procure and grow specimens of the Tasmanian Flora than to spend the same time and resources on a strictly botanic garden. Students of Botany generally commenced their studies in the class room, from Herbaria or readily obtained specimens, and, when imbued with an interest in the science, take up special groups of plants for more attentive consideration, rather than extend such throughout the whole of the orders. The object should be, he thought, (at least in this community) to popularise the love of flowers, and the knowledge of their characters and habits. It was, therefore, to be regretted that the Gardens did not possess an ordinarily good greenhouse, much less a large stovehouse, both of which were really necessary to exemplify the growth and beauty of plants either having their habitat in warmer climates, or produced under such artificial encouragement. It was not creditable to the Gardens, or to the colony, that such an urgent want remained unsatisfied. What he had seen of botanic, or class gardens, showed them to be most uninteresting. The plants could not be grouped for pleasing effect, and many, if not most, were difficult to grow in proper vigour side by side, when in nature they affected very different localities. Therefore the effect of the work was disheartening, and to those engaged in it would seem a waste of time as compared with what could be done with the same attention in a more popular direction. On the whole, therefore, he concluded that the time was inopportune for forming the class garden under consideration, but the subject might be advantageously reconsidered when there were greater facilities for giving it effect.

Dr. PERKINS said, speaking from experience in the Edinburgh Botanical Gardens, the division of plants into their classes did not render the gardens unsightly or unattractive, for they were visited by hundreds of people who had no desire for the acquirement of scientific information. In the interests of those who wished to know something of the nature and habits of plants, it was desirable that a portion of the Royal Society's Gardens should be reserved for botanical studies. It had often been difficult to ascertain the correct name and species of shrubs and trees in the gardens, but owing to the recent efforts made by Mr. Abbott the writing could in many instances be deciphered, and a visit to the gardens rendered additionally interesting.

Captain STANLEY remarked that he agreed with Mr. Grant as to the probability of the public not taking much interest in class gardens after they had been formed, but agreed with Dr. Perkins in the advisability of endeavouring to educate the people. He had only visited the class gardens at Kew once, and then had been unfortunate enough to find himself the only person there, but for all that he considered that such gardens were great educators. However, the subject seemed to him to hinge entirely on the question of money, and he did not think Mr. Abbott could be expected to do more than he did with the funds at his disposal.

Further discussion ensued, eliciting a diversity of opinion on the adoption of the proposal, in which His EXCELLENCY, Mr. SWAN, and others, took part.

In reply, Mr. STEPHENS said that the chief objections which had been stated appeared to be that the proposal would involve increased expense, and that the cultivation of the plants would entail much additional care and trouble; but these difficulties he thought were imaginary ones. So far as he was aware, it had never been contemplated to occupy more than two or three roods of ground, where it could best be spared, and that it was chiefly a question of transplanting a limited number of plants, which are already doing well in the gardens with ordinary care, and arranging them according to their natural affinities. If a few square yards of such a class ground could be completed year by year it probably would be as much as was expected. It was not advisable to attempt to hurry anything of this kind, and as the matter was now placed on record, it would no doubt receive consideration.

The proceedings closed with the usual vote of thanks to the authors of the papers read, and to the donors of presentations.

OCTOBER, 1881.

The usual monthly evening meeting of the Society was held at the Museum on Monday, the 10th of October ; His Honor Mr. Justice Dobson, V.P., in the chair.

Mr. John Hamilton, who had previously been nominated by the Council, was balloted for, and declared duly elected as a Fellow of the Society.

The following returns for the past month were brought under notice, viz.:—

1. Visitors to Museum, on Sundays 581, on week days 786, total 1,367.
2. Ditto to Gardens 4,500.
3. Plants, etc., received at Gardens :—From Mr. C. F. Creswell, Sydney, 1 bag of Norfolk Island Pine seeds. From Mr. S. Purchass, Sydney, a case of Norfolk Island Pine plants. From Messrs. H. Low and Co., London, 58 plants, of which about one-half were dead on arrival. From Mr. C. F. Creswell, Melbourne, seven new Dahlia roots.
4. Seeds sent from Gardens to Messrs. Villmorin and Co., Paris, and the Botanic Gardens, Melbourne.
5. Books and Periodicals received.
6. Presentations to Museum—

Meteorology : 1. From the Marine Board, tables from Mount Nelson and Bruny Island, for September. 2. From the Government Observer, New Zealand, printed tables from Wellington, for July and August.

Time of leafing, flowering, etc., of a few standard plants in the Botanic Gardens during September :—

20th Moutan Peony commencing to flower.
24th Oak commencing to break into leaf.
26th Grape vines ditto.
27th Ash ditto.
28th Sycamore ditto.
29th Horsechestnut commencing to flower.
30th Robinia Pseudo-Acacia commencing to break.

The presentations to the Museum were as follows:—

1. From the Hon. W. A. B. Gellibrand, M.L.C. A Native Tiger *(Thylacinus cynocephalus).*
2. From H. Lamb, Esq., M.H.A. Two Native Devils *(Sarcophilus ursinus),* male and female, from Clarence Plains.
3. From Mrs. Gifford. Specimen of the red-rumped Parrakeet *(Psephotus hœmatonotus),* from Queensland.
4. From Mrs. Lodder. A number of additional specimens of Tasmanian Lepidoptera.
5. From Mr. Glover. A Bush Rat *(Mus sp.),* from Huon District.
6. From Master Pulleine. Five shells from Fiji.
7. From Mr. S. H. Wintle, Specimens from the Scamander Goldfield.
8. From Mr. Ives, Barque Ethel. A Flying Fish *(Exocetus volitans).*
9. From Mr. W. Doodie. Specimen of Agate from Camden Plains, near Mount Barrow.

The attention of the meeting was called to a donation of books, from the library of the late Dr. E. S. Hall, received from the representatives of that gentleman, and comprising about 130 bound volumes, together with a large number of official blue books, reports, pamphlets, etc.

A paper by Mr. S. H. Wintle on "The Scamander Goldfield" was read in the absence of the author, by Mr. STEPHENS ; who remarked that the locality in question, lying as it did on the lower line between the boundary palæozoic and granitoid rocks, possessed special interest for the geologist, and that he could corroborate Mr. Wintle's statement as to the satisfactory prospects obtained from the quartz veins, so far as they have been tested.

The CHAIRMAN announced the discovery, on the West Coast, of a fern, new to the flora of Tasmania, in reference to which he read the following extract from a letter, received by him from Baron von Mueller:—"The fern of which you sent a small fragment is *Aspidium hispidum* of Swartz. As you rightly surmised it is new for Tasmania, though it does not show itself now unexpectedly, inasmuch as this fern has been found in two places of the colony of Victoria. For nearly half a century this Aspidium had not been noticed outside of New Zealand, but it has in later years also been gathered in Mauritius." This fern was recently procured by Mr. George Lefroy, some miles to the north of Macquarie Harbour.

The proceedings terminated with a vote of thanks to the author of the paper read, and to the donors of presentations to the Museum and Library.

NOVEMBER, 1881.

The monthly evening meeting of the Society was held on Tuesday, the 15th November, His Excellency Sir John Henry Lefroy, K.C.M.G., the President, in the chair.

Messrs. H. M. Hull, E. B. Gawne, and W. H. Macfarlane, M.B., who had previously been nominated by the Council, were balloted for, and declared duly elected as Fellows of the Society.

The hon. Secretary, Mr. BARNARD, brought forward the usual monthly returns, viz.:—

1. No. of Visitors to Museum, October, on Sundays, 559; on week days, 414; total, 973.
2. Ditto to Gardens; total, 4,607.
3. Plants, etc., received at Gardens during September and October:—From Mr. C. F. Creswell, Sydney, 1 bag of Norfolk Island Pine Seeds, and 9 new Dahlia roots. From Messrs. H. Low, London, 50 plants. From Baron von Mueller, 6 papers of seeds.
4. Seeds sent from Gardens:—To the Botanic Gardens, Melbourne, 1 package; to Messrs. Villmorin, Andrieux, and Co., Paris, 4 ditto; to Mr. E. B. Heyne, Adelaide, 6 packets.
5. Books and periodicals received.
6. Presentations to Museum.

Meteorology.—Mount Nelson, from the Marine Board, table for October.

Time of leafing, flowering, and fruiting of a few standard plants in the Botanic Gardens during October:—

8th. Carpinus betulus commencing to break.
18th. Ailanthus glandulosus, ditto.
20th. Black Mulberry, ditto.
21st. Common Lime, ditto.
22nd. Elm, commencing to shed seed.
25th. Melia azederach, commencing to break.
30th. Horsechestnut, in full flower.

The presentations to the Museum were as follows:—

1. From Mr. J. W. Johnston. Specimen of Native Bread *(Mylitta Australis)*, from Broad Marsh.
2. From Mr. A. Jackson. A Musk Duck *(Biziura lobata)*, from Hamilton.
3. From Mr. S. H. Wintle, F.L.S. A Pouched Lamprey *(Geotria Allporti)*, from George's Bay. A large Crab *(Pseudocarcinus gigas, Lamarck)*, caught in 70 fathoms water, off St. Patrick's Head, East Coast, Tasmania.
4. From Mr. E. B. Gawne. A Diamond Snake *(Hoplocephalus superbus)*.

5. From the Rev. George Brown, C.M.Z.S. A Native Drum and 13 Spears, from New Britain. Specimens of the Shell from which the "Shell money" of New Britain is made.
6. From Mr. T. H. Bromfield. A young Porcupine Ant-eater *(Echidna setosa).*
7. From Mr. R. M. Johnston, F.L.S. Specimen of a species of Sea Bream (*Girella tricuspidata*), from Southport. In reference to this specimen, Mr. JOHNSTON remarks :—"This interesting fish was obtained by me from a dealer, and is locally known to the boatmen as 'The Sweep.' Hitherto this species was either not known to exist in Tasmania, or it may have been confounded with some other member of the 'Sea Bream' family. Like nearly all of this group, it is an excellent fish for the table, and, in my opinion, when in good condition, is superior to the 'Sand Mullet'(*Mugil cephalotus*), and almost rivals the 'Trumpeter' (*Latris hecateia*) in flavour. I have temporarily, with hesitation, placed it under Quoy Gaimard's *G. tricuspidata.* It is in some respects intermediate between the latter species and *G. simplex*, Richardson ; but while it more nearly agrees with the latter in lateral and transverse series of scales, and in relative length of head, yet its peculiar, well marked, tricuspidate teeth ally it more closely with the former. The two species named are, however, very closely allied."

Presentations to Library :—

From the Ballarat School of Mines, two copies of the Annual Report for 1880.

From His Excellency the President, diagrams prepared by him to illustrate a lecture on the Southern Skies, delivered on the 17th ult., to be made use of hereafter for any instructional purpose the Council may think fit. Symons, British Rainfall, 1879. A file of the *Waratah Weekly News*, in manuscript. Portrait of Mr. W. Spottiswoode, LL.D., President of the Royal Society. Magnetical and Meteorological Observations taken in North America, by Captain Lefroy, R.A., and Sir John Richardson, C.B., M.D., 1855. Agricultural Report of Bermuda.

The President exhibited a number of harmonic curves drawn by Donkin's Harmonograph. This instrument is described in the Proceedings of the Royal Society for 1874. The mechanical construction of it is such that a finely pointed glass pen, following the motions of a pendulum, or of a regularly oscillating crank, traces an endless line on a sheet of paper which is itself in motion under the influence of another crank or pendulum. Some of the curves were produced with pendulums, and some by wheel-work.

In this instrument one or both of the pendulums may be made to revolve either in a circle or in an ellipse. The result is to produce an endless variety of beautiful figures.

The attention of the Fellows was particularly called to the remarkable fact that whenever the ratio of the times of vibration, or of vibration and rotation, is one which corresponds to a definite interval in music, say thirds, fifths, octaves, the result is a figure symmetrical and pleasing to the eye, as the result of the two notes is harmony to the ear, and whenever the ratio of the times is not a musical interval, the result is an unpleasing figure, as it would be a discord in music. This was illustrated by many examples.

Mr. R. M. JOHNSTON observed that the Harmonograph bore a slight resemblance to instruments, made by some machinery manufacturers, which produced similar curves. There was also a form of harmonics produced upon films of soap. In this instrument (the "Phoneidoscope") when true fifths, or any other harmonic intervals are put together, bubble rings are developed ; and if two persons sang together into the instrument at an interval of a full tone, a most disturbed, stormy sea would present itself in the soap film.

The PRESIDENT remarked that the results Mr. Johnston mentioned all turned upon the same law of harmonics, although produced by somewhat different mechanical means.

A botanical paper, by Baron F. von Mueller, K.M.G., M.D., F.R.S., entitled "Notes on *Leontopodium catipes*," was read by the Secretary.

The meeting terminated with a vote of thanks to the authors of the papers, and to the donors of presentations.

PAPERS.

OPENING ADDRESS OF HIS EXCELLENCY SIR J. H. LEFROY, C.B., K.C.M.G., F.R.S., PRESIDENT.

[*Read* 12*th April*, 1881.]

Gentlemen,—The profound sense which I have of my slender qualification for the honourable position which the constitution of this society assigns to Her Majesty's representative, and of my inability to address you with the authority of a master in any field of the vast domain of science, shall not tempt me to take up your time with vain excuses for allowing myself to be placed in such a position. There has been, as you are aware, a considerable interval of time since my predecessor delivered an inaugural address upon a similar occasion. I should be unwilling to see the custom of an occasional presidential address abandoned, and I ask your indulgence for the remarks which, at the request of your Council, I have committed to writing, upon subjects of immediate interest to this Society, however wanting in scientific value.

Museum and Gardens.—I am afraid that I cannot congratulate the Society upon the prosperous state of its finances. We may be regarded in a double capacity: First, as a body of men cultivating natural science for the sake of the pure and inexhaustible pleasure derived from the study of nature, and of its value to mankind, in that capacity we ought to be and we are self-supporting; secondly, as trustees for the public in the maintenance and management of two institutions which may be fairly said to be necessary, and indeed indispensable in these days, but in which we have only incidentally a greater interest than the rest of the community, viz., the Museum and Public Gardens. These the public ought to support, and it admits the obligation. Does it do so adequately? I fear I must reply in the negative. Our Botanic Gardens are not even mentioned in a recent review, by Professor Thisleton Dyer, of the botanical enterprise of the Empire. Want of skilled labour, arising from want of funds, throws them out of all possible competition with other establishments. They are defective in native plants, although about one-fourth of our species are peculiar to Tasmania, and still more so in plants eligible for industrial culture or naturalisation in this island; and I cannot but refer to the condition of the plant labels, which are so necessary for popular instruction, as a standing reproach. Very many interesting flowering trees and plants are without labels; those that there are, are mostly old, defaced, and illegible. A larger and better conservatory is much required; and an economic museum, such as is now connected with most other establishments of the kind, could not fail to be of public utility in this colony also. These improvements cannot perhaps be expected until the public mind is more alive than it now seems to be to the importance of more widely diffusing natural knowledge, a direction in which the influence of this Society ought to weigh. I observe that our Museum had over 10,000 visitors in six months, of whom rather more than half were Sunday visitors. Better labels and fuller descriptive particulars are here also much required; and I may remark that I find we are much in arrears with binding, without which it is difficult to consult our scientific serials.

Members and Papers.—Our numbers, I am glad to observe, keep up, and have slightly increased, There are, I am confident, many gentlemen not yet enrolled whose adhesion would strengthen the Society, which needs to, as I conceive, rest upon a comprehensive basis, and to embrace a wide range of literary as well as scientific interests, if it is to outlive the first harvest of Tasmanian discovery. When I turn to what, after all, is the test of the vitality of any scientific society, the number of original contributions from its members, I find that we have received 60 since my predecessor addressed you. It would be improper, and it is needless, for me to allude, except for a passing expression of gratitude, to those two Fellows to whose indefatigable industry we are indebted for a very large number of them. They may be classified as follows. I think the list is interesting as indicating the present direction of scientific activity here:—Botanical subjects, 13; subjects of geology, 10; land and sea shells, 16; our domestic pest, the codlin moth *(Carpocapsa pomonella)*, 4; other subjects of Natural History, 11; miscellaneous, 6; total, 60. Remembering that we have no endowed chairs of Natural History or Philosophy, and but a limited number of workers, the Society is to be congratulated on such substantial results; and when we remember what considerable additions have been made to the lists of species, more particularly of land and marine shells, and what extensive tracts in the west are either imperfectly examined, or not yet examined at all, we may reasonably hope that the harvest is far from being exhausted. Certainly, as regards Geology, it cannot be so; not only is the exact place in geological sequence of some of our formations still undetermined, but there are some thousands of square miles which have not been, and cannot be, interrogated, so long as they are hidden by a dense forest growth. And it seems as if this broken fragment of the great Australian

Continent, or of some of the lands of a great archipelago, were destined to throw a light on the history of the whole, which it will take many years' study to bring to a focus.

The late Mr. Gunn.—Our Society, gentlemen, has sustained great losses, to some of which, as already noticed by the Council, it is needless for me to refer. I may, however, remind you of the very recent death of the late Mr. Ronald Campbell Gunn, who for nearly half a century did honour to this and earlier societies. The infirmities which attended the close of his career prevented my ever having the pleasure of making his acquaintance, but I allow myself to quote from the pen of his illustrious friend and fellow-worker, Sir Joseph Hooker, the tribute his scientific labours had earned twenty years ago:—"Ronald Campbell Gunn, F.R.S. and L.S., to whose labours the Tasmanian Flora is so largely indebted, was the friend and companion of the late Mr. Lawrence, from whom he imbibed his love of botany. Between 1832 and 1850, Mr. Gunn collected indefatigably over a great portion of Tasmania, but especially at Circular Head, Emu Bay, Rocky Cape, the Asbestos and Hampshire Hills, Western Mountains, Flinders, and other islands in Bass' Straits, the East Coast, the whole Valley of the Derwent, from its sources to Recherche Bay, the lake districts of St. Clair, Echo, Arthur Lakes, and the country westward of them to Macquarie Harbour, and the Franklin and Huon rivers. There are few Tasmanian plants Mr. Gunn has not seen alive, noted their habits in a living state, and collected large suites of specimens with singular tact and judgment. These have all been transmitted to England in perfect preservation, and are accompanied by notes that display remarkable powers of observation, and a facility for seizing important characters in the physiognomy of plants such as few experienced botanists possess." "I had the pleasure," continues Sir J. Hooker, "of making Mr. Gunn's acquaintance at Hobart, in 1840, and am indebted to him for nearly all I know of the districts I then visited; for we either studied together in the field or in his library; or when he could not accompany me himself, he directed one of his servants, who was an experienced guide and plant collector, to accompany me, and take charge of my specimens. I can recall no happier weeks of my various wanderings over the globe than those spent with Mr. Gunn, collecting in the Tasmanian mountains and forests, or studying our plants in his library, with the works of our predecessors, Labillardière and Brown."* Such men are not too often met with in any community, and are rarely honoured as they deserve until they are gone. We can at least offer the expression of our respect and high appreciation to the friends he has left.

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* "Flora Tasmaniæ," I., p. cxxv.

Recent Inventions.—Residents in Hobart are already familiar with one of the most surprising of recent discoveries—I mean the power of conveying the sounds and tones of the human voice to great distances by means of the telephone—through its daily employment for many months past in communication between the city and signal station at Mount Nelson, a distance of six or seven miles. It is, perhaps, not so generally known that conversation has been held, although with difficulty, between Hobart and Low Heads, at the mouth of the Tamar, a distance of 160 miles. The facility with which we accept these discoveries, and almost cease to wonder at them, is itself not the least remarkable feature of our times. We are losing a sense of the limits of possibility in nature, and are as ready to believe the most incredible things, if they wear the garb of science, as our ancestors were in their simple and child-like ignorance. A very few years probably will elapse before telegraph poles will form a necessary accompaniment of every road, and civilised men will communicate verbally at a distance as habitually as we now do face to face. Involving, in fact, as the instruments in use here do, the application of the microphone, we have two philosophical instruments of great complexity, and full of instruction, at our command: a mind that can clearly follow and fully comprehend the principles of their construction, the functions of their several currents, has learned much of physics, and of physics in a direction of ever widening application. It is to be regretted that we have no physical lectures; and here, I think, the State might step in, not by the endowment of any chair, but by the provision of such honorariums to be placed at the disposal of this Society as would induce competent persons to give them the intellectual pleasure, and the distinction attending them being a large part of the reward. The time and trouble involved, and usually the expenses of preparing diagrams, illustrations, models, and apparatus, quite preclude most persons, not being professors or professed lecturers, from imparting their knowledge in this way. I can scarcely pass this subject without alluding to two applications of the fertile discovery of Professor Graham Bell, which must have quickened in many minds an intense desire to witness them—I mean that beautiful but costly toy, the phonograph, which I have heard reproduce an Italian song, on turning a handle, in the exact tones of the singer; and, more recent still, the discovery by which light itself is made instrumental to the transmission or reproduction of sound—the photophone. This instrument, as you are aware, depends upon the peculiar property of selenium, which is not a conductor of electricity in general, to become an imperfect one when fused and cooled slowly. Another property is required, which it also has been found to possess. Its resistance to electricity is much reduced by the action of light; a selenium pile being then interposed in an electric circuit, and a beam of light of varying intensity being made to fall upon it, the current is more or less resisted in proportion to that intensity. The light is made to vary by the effect of the voice in rendering the diaphragm of a telephone more or less convex or concave, and thus sounds have been reproduced at distances up to 800ft. It is not, however, as a substitute for the ordinary telephone that this beautiful instrument is likely to be of value, but for its applications in rendering molecular vibrations audible wherever they occur, opening up quite a new field of experimental research. It is not necessary for me to enlarge on these subjects. The sources of popular information on all these inventions are numerous, and ample to satisfy curiosity; what is rather wanted, perhaps, is the curiosity itself. I mean an active-minded interest in such subjects, to be created by systematic instruction; and here I must remark that I much approved of a suggestion that one of the Tasmanian Scholarships should occasionally be awarded to attainments in mathematics and physics, with only a pass qualification in classics, if we cannot afford to add to their number. Competent teachers would soon be forthcoming. From such students the colony would in time be furnished with mining, telegraph, and other engineers, surveyors of a high class, well-educated men, in fact, in many departments of applied science, for whom it must have a demand, as its industries develop, and who are not turned out from existing schools.

Mr. Crooke's Researches.—At the risk of exhausting your patience, I must allude to one other field of new research, appealing to the imagination, and amazing the spectator more perhaps than telephones or photophones,—I mean Mr. William Crooke's researches* into what he has denominated the ultra-gaseous state of matter. That an absolute vacuum is a thing no art or apparatus can produce, is of course acknowledged. What must then happen when something so near a vacuum is produced that the gaseous pressure within a glass vessel is reduced to a few thousandths of an inch? It follows that the atoms still remaining will disperse, and fill the whole space, not of necessity at equal distances, but at greatly augmented distances from each other. The denser they may be in any one part—as where they are attracted to the walls of the enclosure—the sparser must they be in other parts. These invisible atoms, moving among themselves at inconceivable velocities, can be made to manifest their pressure to the eye: and as a skilful blacksmith can heat a rod of iron red hot by hammering it, so can they be made to heat a piece of platinum foil red hot by impinging upon it off a reflector properly disposed. Into the field of physics and dynamics opened by these exquisite experiments, by which I have seen the Royal Society of London almost entranced; into the behaviour of these bodies under the influence of electric or magnetic currents, I am not in the least competent to enter. I only refer to them as matters as new, as they are profoundly interesting; and suggestive of our own need for physical instruction to keep up with the discoveries of the day.

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* Vol. 30, Proc. R. Soc., 1879, p. 469.

The Survey Department.—To pass to what is more germane to our business. It is, I think, from this Society that the responsible guides of public affairs may reasonably expect to hear from time to time of subjects whose importance, being scientific rather than political, is not likely to be pressed upon them by outside interest. Among these I venture to name the imperfection of our county maps, especially those which include new mineral districts, and the poverty of the topographical information they convey. Indeed, I must go a step further, and say that from a scientific point of view, the organisation of our Survey department cannot be pronounced satisfactory. The office of Surveyor-General being merged in that of Minister of Lands and Works, there is no longer a professional chief to direct and combine the work of the numerous district surveyors discharging duties of great present, and still greater future, importance. Under such circumstances, it will be no wonder if serious discrepancies are found to exist hereafter between surveys of different dates, or that we ask in vain for a good map of the country within 20 miles of Hobart. The maps accompanying Mr. Gould's Geological Reports give more detail than the county maps; but besides being mere sketches, and of a fragmentary character, they are scarcely to be procured. These reports I find scattered through no less than twelve bulky volumes of Parliamentary papers, and it appears to me that the time has come for collecting and reprinting them in a more convenient form.

Meteorological Returns.—The advancing years and infirmities of our Fellow, Mr. Francis Abbott, F. R. A. S., have, as the Society was informed by the last report of the Council, led to the discontinuance of the meteorological register kept by him for the long term of 35 years, an instance of self-devotion and gratuitous service to science which it would be hard to surpass. The only register now regularly kept that I know of, except those at the lighthouses, is that of Mr. W. E. Shoobridge, at New Norfolk, commenced in 1874. We are much behind other colonies in this respect. Meteorology requires more and more a multiplication of observations. The excessive humidity of our climate on the West Coast has not, I think, been done justice to. It is stated that the rainfall at Macquarie Harbour exceeds 100in.* It averaged 67in. on the Hampshire Hills, 1837-9,† and in one year exceeded 80in. How much of this is due to the vast forests which still clothe that region, covering 5000 or 6000 square miles, and how much to permanent physical conditions, cannot now be guessed, but it is of considerable importance to ascertain the facts before any material change is effected in the aspect of the country by settlement. With regard to these instruments which only require attention once a day, such as registering thermometers and rain-gauges, I cannot imagine that there would be any difficulty in multiplying them. In some colonies, as, for example, Canada, use is made of the masters of the common schools, who are highly intelligent men, very stationary, and can all be instructed; and I am disposed to recommend, as a beginning, the provision of instruments for instructional purposes at the Central School. Attention was pointedly called, as you are aware, at the Intercolonial Meteorological Conference, held at Sydney in November, 1879, to the importance of this colony in relation to weather telegrams. I have reason to believe that we shall shortly be invited to take part in a general plan of intercolonial observation, receiving and interchanging them, and otherwise contributing our share to a species of Australian confederation, which can alarm no susceptibilities and arouse no jealousies.

Gentlemen, I feel that I have taken up a great deal of your time, and have said very little; I have only now to thank you for the kindness and attention with which you have listened to me.

NOTES SHOWING THAT THE ESTUARY OF THE DERWENT WAS OCCUPIED BY A FRESH-WATER LAKE DURING THE TERTIARY PERIOD.

By R. M. Johnston, F.L.S., etc.

[*Read* 12*th April*, 1881.]

Apart from the circumstance that the extensive tertiary fluviatile and lacustrine formations of Australia have been the principal sources from which we have derived our rich treasures of gold and tin in the free state, their study from a naturalist's point of view is also peculiarly interesting from the nearness of their deposition to our own time.

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* "Wallace," p. 244.

† "Backhouse," p. 126.

The greater opportunities to examine the immediate features of one's own neighbourhood, to some extent, determine the direction of our studies in any branch of natural history, and thus, perhaps, my residence for ten years in Launceston—itself cradled in the undulations of an old tertiary mudbank—may have had something to do with my choice of a subject for this evening.

Many present may have noticed along the shores of the Derwent, particularly in the neighbourhood of Sandy Bay, One Tree Point, and Cornelian Bay, a series of sandy and clayey beds sometimes of considerable thickness and extent.

They frequently dip irregularly at various angles, and in various directions, as if they had been much disturbed subsequent to their deposition, but they are never found at an altitude of much more than 40 feet above the existing sea level.

The sandy portions, in some places, may readily be mistaken for members of the older or primary rocks, but they are invariably closely associated with thinly-bedded clays—white, yellow, and grey,—and they are coarsely granular and irregularly bedded.

The clays, on the contrary, are generally most regularly and thinly bedded like the sheets of a huge volume. Now if we examine any one of these beds a little more closely, we may discern that it is in turn composed of innumerable filmy leaves, finer than the most delicately prepared paper, all in the plane of the lines of bedding. I have purposely drawn the parallel with a book, for, like it, each of the clayey pages are crowded with characters—Nature's own handwriting, telling many an interesting story of the times when they were impressed and deposited beneath the waters of this ancient lake; while the rifts, contortions, crinklings, overlying rocks and drifts, and the waste of the ever encroaching sea, tell of the vicissitudes to which the beds have been subjected subsequently. Since my recent arrival here, I have spent much time in studying their characters, and I have carefully traced their extent by inspecting every foot of coast line, watercourse, railway and road cuttings, and natural faces exposed, within a seven mile radius of this City. My acquaintance with the "solitary patch of limestone" at Geilston, which is still quarried by Mr. Albury, and of the old limestone quarry at the head of Burnett-street, to which I was at one time guided by Mr. Legrand, enabled me to decipher their signs more readily.

Indeed many of the characters of the leaf and fruit remains, are identical with those found so abundantly in similar lacustrine formations throughout Australia and Tasmania, the relations of which with the Geilston Travertin I have already discussed most fully before the members of this Society,* and which have subsequently received additional illustration in the interesting paper by Dr. Barnard, in respect of the vegetable drifts of Gulgong. In order that I may establish the characters, relations, and position of this interesting formation, which indeed lies within as well as around the fair city of Hobart, I shall perhaps be enabled to do so more effectually if, in the first place, I confine myself to a description of the principal sections as they occur at particular places, some of which I have already referred to, viz :—One Tree Point, Sandy Bay, Cornelian Bay, Pipe Clay Bluff, Prince of Wales' Bay, Beauty Bay, Lindisfarne Bay, Geilston Bay, and the neighbourhood of Burnet-street, Hobart. It will be seen upon the Map which has been kindly prepared for me by Mr. Frank Lovett that, on the one hand, all the points lie within the basin, and are subject to the wasting advance of the waters of the existing estuary; while, on the other hand, they abut against the older rocks, and the eruptive diabase represented by Mount Nelson, Knocklofty, the Domain, Mount Direction, the lofty ridge terminating in Point Rosny, and the more distant but majestic crest of Mount Wellington.

These latter diabasic rocks constitute the chief characters, and have rendered famous the features of our neighbourhood, and they surround both city and the formation being described, as with a great encircling arm.

The formation at One Tree Point lies at the base of Mount Nelson. It forms a gentle eminence of a triangular shape, whose base, washed by the Derwent, stretches from opposite Sandy Bay Point to a creek which runs into the Derwent nearly opposite Trywork Point, while its apex lies between two hollows which radiate from that elevated saddle which forms so conspicuous a feature beyond the Flagstaff Station, at Mount Nelson.

A section underneath the new defence works on the Brown's River road presents the following appearance, which, with some of the leaf figures, have been graphically sketched for me on a larger scale by my friend Mr. F. Salier. *(See Plate 1.)*

The beds marked *a. b.* dip at a considerable angle to the south-east in the direction of the existing channel. Were it not that the laminæ in the plane of bedding are rich in certain well-known tertiary leaf impressions, the appearance of some of the lower members of the group, which include a motley assortment of coarse and huge angular blocks, principally of the fossiliferous mudstone of Palæozoic age, would be apt to mislead, and perhaps may have hitherto misled the casual observer.

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* Proc. Roy. Soc., 1879.

The latter included blocks, huge, irregular, and tilted at all angles, so as to obscure, if not conceal, the true lines of bedding, are very puzzling; but, if we accept a conclusion which is forced upon us from independent considerations, we can easily conceive how the otherwise regular lines of bedding with the true sedimentary laminæ may be harmonised with the included angular blocks of a previous age.

I have already observed that one of the limits of the base of the formation was opposite Sandy Bay Point. There, on the Brown's River road, a section exists, clearly showing the older mudstone rock *in situ,* against which the upper members of the tertiary lacustrine formation may be seen to abut. *(See Plate* 2.*)*

Now all who have travelled along the Huon Road, or who have sailed under the cliffs at Bedlam Walls, must at times have been struck with the regularity of the beds of the older mudstone series as they lie over each other in vertical sections, and quarrymen at the new battery at Kangaroo Point will tell you how easily one of the layers may be separated from the adjoining one. Some of the layers, however, are of softer texture than the rest, and consequently a wall of such rock must wear away unequally. The rocky cliffs below the Shot Tower are good illustrations of this unequal waste of certain beds. At this spot there may be seen the rapid destruction of a softer layer at the sea level, which, when far enough advanced, will cause, as it has already done, the fall of immense faces of the superincumbent mass, which, by degrees will, by wind-driven waves of terrific force, be strewed as angular blocks among the finer sands of the advancing sea.

Now, if we assume that the ancient tertiary lake here spoken of had an extensive surface, of which, from other sources, there are proofs almost amounting to demonstration, we can readily conceive how the strewn angular blocks of fossiliferous mudstone at *a*, fig. 1, came to be included among the more regularly stratified clays and sands, and associated with the fruit and leaf impressions of a later age. Nay, more, the assumption thus forced upon us will enable the observer, as it enabled me, to anticipate in great measure what other observations in the neighbourhood can verify and amplify.

Let not the over-cautious, therefore, frown upon anticipations of this kind, for in truth they are the half-lights or the natural fruits of former observations, and when recognised as such they constitute the more valuable part of that inestimable possession which Professor Tyndall has happily designated the "Scientific Use of the Imagination." From this momentary digression let us again turn to our section as exposed at One Tree Point. The overlying basalt marked *c*, is essentially a dark, close-grained, feldspar basalt, with abundant grains and crystals of olivine. It is full of small fragments, scarcely altered, of the surrounding stratified rocks. The rock itself is in every respect very similar to the basalts at Deloraine, Breadalbane, Table Cape, Geilston, Campbell Town, Ringarooma, Latrobe, Fingal, and various places in Victoria, in nearly all of which places it overlies fluviatile and lacustrine formations similar to that at One Tree Point. Towards the south the basalt seems to have flowed in repeated layers at different times. This may be inferred also from the marked difference in the form and density of the various sheets. The flows of basalt to the south, which I assume to be the more recent, are very unlike the massive beds at the northern point of junction with the underlying clays. At certain points towards the creek southward, they are highly vesicular, and present very much the appearance of pumice stone, although of a more dense character. This also is the character of the soft underlying feldspar basalts of Beauty Bay, Lindisfarne Bay, and Cornelian Bay, good sections of which may be seen at low water all round the sea margin.

The feldspar basalt on the northern and western shores of Prince of Wales' Bay is identical with that at Cornelian Bay, but the cavities are filled with lime, and is thus converted into a true amygdaloid. It is very curious that all the great basaltic sheets of Tasmania and Australia of tertiary age should be so closely associated with the great fresh-water systems of the period; and it is also worthy of note that the mode by which they were ejected was probably by fissure-eruption, and not by the more familiar type of conical volcano. The immense level sheets of basalt in the Midland and Northern districts of Tasmania, together with the vast plains composed of similar basaltic sheets in Victoria, support the views recently advanced by Professor Geikie,* who states positively upon the subject, that the volcanism of earlier periods as exhibited in the great sheets of the Western States of America, Abyssinia, India, and elsewhere, can with difficulty be explained by reference to any modern volcanic phenomena.

The persistent horizontality of the tertiary basalts in Tasmania and Victoria, also offer strong reasons in favour of the fissure-eruption theory.

With respect to the flows at One Tree Point there is another interesting feature, which, if correctly interpreted, proves that there were repeated flows of basalt also at the point where the rocks are most crystalline and homogeneous in character. This evidence consists of the discovery of bone breccia in what I believe to be the cooling joints of an older sheet of basalt. From close personal examination of the bones *in situ*, and from replies made by Mr. Moore, the intelligent overseer of defence works,—who first, through Mr. Roblin, drew my attention to the "bone discovery"—I feel assured that the bone breccia was washed into the cooling joints of an older sheet of basalt, and was subsequently overlaid by another flow.

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* *Nature*, November, 1880.

Unfortunately the bones are so broken up that they are of little service in determining the exact nature of the animals to which they belonged. Mr. Roblin, however, by careful pulverization of some of the fragments of breccia, among other undetermined matter, obtained a small well-preserved tooth, which undoubtedly belonged to a marsupial of the genus Hypsiprymnus, or Kangaroo Rat family. I also succeeded in obtaining one or two bones of interest, among which is the well-preserved incisor of a marsupial allied to the existing Wombat.

I have made enlarged drawings of the more important fragments, which probably at some future time may be serviceable at least in correlating the existence of the same animal elsewhere, even if of little value in determining its exact specific rank. The bones obtained by the late Mr. Morton Allport from the Geilston travertin are most probably the remains of the same species.

It would be interesting to make comparisons with the collections referred to, but I fear they have not been preserved. It will be remembered by some that Mr. Allport and others at first inclined to the opinion that the fragments of bones preserved at Geilston belonged to existing species, but this opinion was formed at a time when the relative position of the travertin beds was not very clearly understood. It is probable that the bone remains could only be identified with existing genera, and that there is not sufficient evidence to declare specifically their exact nature. However, some of the members present may be able to give us further information regarding this matter.

Before leaving the section at One Tree Point, it is desirable to draw particular attention to the fault at *d*, fig. 1. It is evident that by the fault *d*, the beds *a* and *b* have again been thrown up, so that we have, in travelling towards Kingston, a repetition of the section *c* to *d*. Between *e*, fig. 1, and the northerly limit opposite Sandy Bay Point, *c*, fig. 2, there is evidence that considerable denudation has taken place, and consequently we are unable to fix, with satisfaction, the probable thickness of the stratified sands and clays at this point. The overlying sheet of basalt is only about 6ft. thick at the extreme point, but becomes massive, probably from repeated flows, towards the west.

The observations which I was enabled to make regarding the conditions under which the One Tree Point leaf beds were deposited, predisposed me to expect that in the protected bays on either shore of the estuary at a similar level I should find further evidences of the lake system, which even then I had reason to infer must have included the Geilston travertin, which I now regard as a deposit formed in a small bay of this old lake. In this respect my expectations were more than realised, for in carefully examining the coast lines at the first three points I selected for examination, viz., Sandy Bay, Cornelian Bay, Lindisfarne Bay, I discovered sections proving their close relationship, even more remarkable than that at One Tree Point, which first arrested my attention.

SANDY BAY DEPOSITS.

At Sandy Bay there are several interesting sections belonging to the formation. One of them, beyond Dunkley's Point on the Brown's River road, is composed of a series of clayey and arenaceous beds, irregularly disposed about 30 to 40 feet high. It is capped by what appears to be a tufaceous loamy soil. The surface of this loamy bank, like many other points on either side of the Derwent, is covered with a layer of the comminuted remains of existing marine shells, about 1 foot in thickness. The shells appear to have been subjected to fire, for which also there is evidence in the abundance of wood-ashes and charred remains of timber belonging to existing vegetation which enveloped the shells.

The best and most interesting section at Sandy Bay is to be seen at a small projecting sandy promontory nearly opposite the new Rifle Range. At this point a series of finely bedded blue and reddish clays more or less arenaceous are tilted at a very high angle against a thick-bedded reddish sandstone of doubtful age. There appears to be a fault at the point where the clays are inclined at a very high angle against the sandstone, and it is evident that a strong lateral pressure has bent them up into their present form. When we take into consideration the eruptive disturbances subsequent to their deposition, of which, in their vicinity, I have already given evidence, we may reasonably expect considerable crumplings and fractures of this kind.

Sketch 3 gives in outline the principal features, and the relations of this section. *(See Plate No. 3.)*

The fine blue and red clays *b* are extremely rich in fossil leaf impressions, but as the purer clays are often very soft, and the sandy beds friable, it is difficult to get perfect specimens. The forms common to One Tree Point, Geilston, Pipe Clay Bluff, Burnet-street, and elsewhere, are found here in the greatest abundance (see figs. 1, 34.)

The sapindaceous-like form so common about Launceston, is also found throughout the local formations where the beds have been exposed. Between the sandy point referred to, and the elevated diabasic bluff to the north against which the fossiliferous clayey beds are again seen to repose, there is evidence of the great thickness of the system, although the denudation, which has been great, together with superficial drifts, have obscured the junction with the series to the southward. There is every reason for the belief that the district known as Sandy Bay proper was almost altogether beneath the waters of this ancient lake.

PIPECLAY BLUFF, CORNELIAN BAY.

The next important section illustrative of the nature and extent of the system is to be found in Cornelian Bay, at a place called the Pipeclay Bluff. The beds at this place are nearly horizontal, and they quietly repose upon the Domain diabase at a short distance beyond a small gravelly point which juts out into the bay. The lower members are composed of a fine whitish pipeclay, which is sometimes used by the poorer classes as a whitewash. These clays are readily reduced to a milky state in water, and have most probably been derived from the waste of the white mudstone rocks of palæozoic age, which abound in the immediate neighbourhood, *e.g.*, Geilston. It is in these white clayey beds where the leaf impressions of many extinct species of trees are most perfect and abundant. The impression of the fine secondary veinlets of the leaves are preserved with faithful delicacy. The impression of fruit valves are also seen occasionally. I have on several occasions obtained the casts of *Pleisiocapparis leptocelyphis, F.V.M.*, both here and at One Tree Point. This particular fruit is very common on the opposite shore in the Geilston travertin beds. There is no doubt of the identity of some of the leaf forms with those found at Breadalbane and Muddy Creek on the Tamar, while their relations with all the local leaf deposits, which I believe to be members of the same lake system, are so abundant as to place the matter beyond reasonable dispute. The upper members of the Pipeclay Bluff series are of a more arenaceous character, and they are coloured red with the surface water from the diabase above on the Domain.

They are, however, rich in similar leaf impressions, though of course less perfectly preserved.

The sketch 4, although not drawn to scale, gives a fair idea of the section at this point. It is most probable that had not denudation scooped away the beds in the direction of Cornelian Bay Cemetery we could trace the clays as they dipped under the basalt at Cornelian Bay Cemetery Bluff. *(See Plate No. 4.)*

The basalt sheets at Cornelian Bay Cemetery are soft, vesicular, and sometimes disposed in hexagonal columns in the exposed vertical faces. There is scarcely any doubt but that the similar sheets, at a short distance across the estuary, (*i.e.*, at Beauty and Lindisfarne Bays), were at a recent period connected. It is also probable that the soft vesicular masses at Cornelian Bay bear the same relation to the more dense and crystalline sheet overlying the travertin at Geilston as the dense and porous sheets at One Tree Point already described. The basaltic sheets to the north and west of Prince of Wales' Bay are also mostly vesicular. Most frequently the cavities are filled with lime, and are thus converted into true amygdaloids.

The best illustration of the extent of the pebbly drifts overlying the basalts may be seen at Lindisfarne Bay on the seaward margin of His Honor Mr. Justice Dobson's property, of which No. 5 is a sketch. *(See Plate No. 5.)*

The water-worn pebble beds are sometimes of considerable thickness. The pebbles have been derived from various sources:—Fossil pines silicified from the coal measure sandstones, fossiliferous water-worn blocks from the palæozoic mudstones, waterworn boulders of diabase of secondary age, feldspathic basalt from the underlying rock, and fossilized trunks of a well-known exogenous tree of tertiary age, evidently silicified *in situ*. The appearance of the latter wood, rough, angular, not worn, presents a marked contrast when compared with the polished water-worn silicified pines and other pebbles from the older rocks. The sections of the fossil wood of tertiary age under the microscope appear to be identical in every respect with similar sections obtained by me from kindred deposits near Little Badger Corner, Flinders' Island, and also at Corra Lynn, Launceston.

SHELL BEDS.

I have also shown that the pebbly beds occur in the same position relative to the basalt on the opposite western shore, and some of them with the shelly deposits at Cornelian Bay have already received attention. Mr. Wintle, who is a very intelligent observer, has drawn attention to them on several occasions. Some of his interesting observations have already been discussed before the members of this Society. In one of them he has correctly shown that the agates, cornelians, and jaspers, so abundant around the beautiful

Cornelian Bay, have been derived from the waste of the older gravel drifts which overly the basalt.

Mr. Wintle inferred that the pebbly beds with the overlying surface layer of comminuted shells, and the underlying basalt, were upheaved at a recent period from the bed of the existing estuarine sea. That the shelly accumulations are in reality indications of a "raised sea beach."

The comminuted shells which are all of existing littoral species, (viz. *Ostrea edulis, Mytilus latus, Venus aphrodinoides, Rupellaria diemenensis, Risella melanostoma, Littorina unifasciata Trochocochlea constricta, etc., etc.)*, favour this very natural conception.

My acquaintance with the undoubted raised sea beaches of the islands in Bass' Straits, and along our northern coasts, predisposed me to concur with Mr. Wintle's view of the question prior to my discovery of the true relation of the basalts with the tertiary leaf beds at the various points already described in this paper. But a careful examination of the shell beds themselves from Blackman's Bay to Rosetta Crossing on the western side, and from Geilston to Frederick Henry Bay on the eastern shore, has convinced me that the views of the late Mr. Gunn, the most illustrious among Tasmanian naturalists, are most in accord with all the facts which are now known to me. You are all aware of the close observing powers possessed by the late Mr. Gunn, and the many opportunities which he had of making observations as regards the life and habits of the aboriginal tribes which frequented the coasts, especially the sheltered coves and beautiful headlands of the Derwent and Tamar. I cannot do better than give a description of their shell feasts in his own words:—

In a paper contained in vol. 2 of the Tasmanian Journal of Science, 1845, to which my attention was first specially directed by Mr. Calder, after preliminary remarks regarding the shell heaps, Mr. Gunn goes on to say:—"I was led to infer, at first, that they had been artificially and recently applied as manure. It was not until long after when I had an opportunity of observing some lately formed heaps of shells on the West Coast of the island that I ascertained the truth. As some persons otherwise well informed still believe that changes in the relative levels of land and sea may have led to the appearance of the shells in their present places, I have thought it best to record my observations on the subject. The aborigines of Tasmania appear at all times to have derived a considerable portion of their food from the sea, and* as they seem to have no effectual means of catching fish in any quantity, the testaceæ and crustaceæ constituted the principal and almost only supply they drew from that element.

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* Mr. Calder states, that in their wild state they did not eat scale fish.

From the reports of early navigators, it would seem that the aborigines existed in considerable numbers along the coast of Tasmania; and we may thence infer that the consumption of shell-fish must have been very great, as they ate no vegetables or substitute for bread. In cooking, the shells appear in all instances to have been merely roasted in the simplest manner, as I have never traced any indications of ovens or stones arranged to be heated. The burning of the shells has hastened their decay. In obtaining the shell-fish the women were, I believe, almost exclusively employed, wherever diving was requisite, as for the species of haliotis and oyster, these being brought to the surface in baskets formed from various sedge-leaved plants.

In the majority of cases they consumed their food as near as possible to their fishing stations; occasionally going a little inland to avail themselves of a spring or stream of fresh water. I have, however, observed in a great many instances that there were unusually large accumulations of shells on projecting points, headlands, and places commanding extensive views, whence I suppose that they adopted these sites for their repasts to protect them from the attacks of hostile tribes."

He elsewhere describes that the heaps of comminuted shells are various in extent and thickness, and invariably burnt and intermingled with charcoal, etc.

In corroboration, I have to offer the following observations :—

1. Wherever the shells are found undisturbed by recent landslips,* I have found them always more or less comminuted with a burnt-like appearance—unlike the northern raised beaches—and enveloped in what appears to be ashes, for they are invariably full of the charred embers of the wood of existing trees.

2. At Pipeclay Bluff, Lindisfarne, New Town Bay, and elsewhere, I have frequently found the ordinary rude chipped flints of the natives intimately associated with the shells. I have given samples of these flints to His Excellency the Governor Sir John Lefroy, and to His Honor Mr. Justice Dobson, who will be able to testify as to their genuineness so far as they are chipped native flints. I have also dug out from the undisturbed beds the split bones of existing marsupials, which appear also to have undergone roasting.

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* The section which Mr. Wintle refers to is due, I believe, to the subsequent re-distribution of landslips caused by the encroaching waves at Sandy Bay.

The shelly layers invariably follow the irregularities of the surface along the coast line upon a vegetable loam irrespective of level. The layers are very irregular in thickness and extent. On favourite promontories of the natives, such as New Town Bay Point, the burnt heaps are over four feet thick.

4. Inland where the levels, free and open, are far under the undisturbed heights at which the shelly layers frequently are found along the coast, I have never found traces of the shells anywhere at or near the surface. This would not be the case if there were an upheaval sufficient to have raised the shells along the estuary to their present position.

5. The gravelly and pebbly beds have evidently been distributed by fresh water, most probably at a period long anterior to the introduction of the existing marine fauna, because in my opinion they contain remains of an extinct tertiary vegetation *in situ;* and I have never been able to trace any recent or marine shells in their beds.

6. Extensive isolated patches occur, in every respect identical in character, at such heights upon the Domain as to make it difficult to conceive that they were deposited there by other than human agency.

7. Frequently where the surface soil gives evidence of having been least subject to aërial erosion the shelly accumulations suddenly cease entirely, to reappear again and again in such a manner as would be difficult to account for if we supposed they were produced in the bottom of a shallow estuary, or at any limit within the influence of its waters.

8. The accumulations are certainly not due to the agency of winds.

Taking all these points into consideration I think it is clear that the accumulations are solely due to human agency; that they are in reality, as described by Mr. Gunn, the "kitchen middens" of the extinct Tasmanians. That they are vast in extent and thickness along our estuaries is to be expected when we consider how much this rude people depended upon the marine shells for subsistence. It must be borne in mind also that the Tasmanian race, from an ethnological point of view, must have existed for countless generations upon the island; for otherwise how can we account for the marked racial type when compared with the natives of the Australian mainland and elsewhere? I think therefore that I am justified in separating the surface shell layer from the underlying gravels and drifts as shown in sections 4 and 5.

The latter I conceive to be the upper members of the lacustrine deposit of tertiary age; the former, an artificial accumulation belonging to the existing period.*

It may be well now to summarise some of the leading features of the system with which, in detail, I have endeavoured to make you familiar.

If in imagination we carry ourselves far back to the epoch which immediately preceded the reign of the eucalypts, when the Araucaria and Cinnamon trees graced the slopes of the neighbouring hills, we might from some commanding eminence (such as Mount Nelson) look down upon a magnificent sheet of water at our feet which would, in a general way, resemble in outline the existing estuary of the Derwent. With a few minor exceptions its sinuous boundaries would follow the same lines, but its waters would be fresh, and the Domain and Trinity Hill would be almost isolated in their midst. The great features of the surrounding country, Mount Wellington, Mount Nelson, Knocklofty, The Gunner's Quoin, Mount Direction, would be almost unchanged. On a stormy day we might also see its surface broken into crested waves; and in the neighbourhood of One Tree Point and Geilston we might watch how the chalky-looking cliffs of mudstone rock were undermined and crushed by their repeated blows, and also see the milky sediment the result of such waste as it was floated away to eventually settle in the quieter waters of the sheltering bays.

The vegetation which luxuriously fringed its shores would appear new, although its general features would not strike us as being altogether unfamiliar.

The botanist would find, instead of the sombre gum and the green wattle, a large number of trees with elm-like leaves and walnut-like fruits with 4 and 5 valves. In the slopes of the bay near Geilston a species of Araucaria (A. Johnstonii), like A. Cunninghami, would rear its curiously imbricated branches crowned with their singular spiny cones. If we searched among the dead wood in the shady places we should find an abundance of strange land shells (Helix Huxleyana, H. Geilstonensis, Bulimus Gunnii), one of which a larger species (Helix Tasmaniensis) would be specially interesting in the eyes of a conchologist. At times our imaginary conchologist might espie, however, a single individual whom he would recognise as an old acquaintance (Helix Sinclairi). It is even possible that no fresh-water Unio would be found to inhabit the waters of the lake; and thus it would exhibit a similar relation to that which at present distinguishes the northern and southern waters of Tasmania. Of the higher animals we can only conjecture, but we are at least sure that many of the marsupial tribe, allied to the existing Wallaby and Kangaroo Rat, abounded in the scrub close by.

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* Having examined a number of the shell heaps near Hobart, I have no doubt whatever of their artificial character. They resemble shell heaps that I have seen along the Atlantic and Pacific Coasts of America, which were deposited by the Indians living on the coasts.—W. DENTON.

This imaginary scene may fairly be taken to represent what we know of the earliest stage of this ancient lake of the Derwent, which I consider to belong to the same horizon as the lower zone of the Launceston Tertiary Basin.

The second stage is indicated by the disturbances caused by repeated eruptions of feldspathic basalt along the margin of the old lake, and spreading over a portion of its floor. Cornelian Bay Cemetery and One Tree Point represent this stage clearly. It is evident that a very long period must have elapsed between the formation of the first sedimentary deposit of the lake and the period when the eruptions began. It is also clear that the period of disturbance must have been of long duration. The Sandy Bay deposits are good illustrations of the first period referred to. The second stage I recognise as the equivalent of the middle zone of the Launceston Tertiary Basin.

The third stage marks the distribution of the gravel beds with their agates, jaspers, cornelians, and fossil woods. At this time the lake must have been rapidly shallowing. It is even possible that the mere horizontal advance of the sea is alone necessary to explain the final draining of this ancient freshwater system. If the outer lip of this lake basin was pierced by the slowly advancing sea, it would sufficiently account for all the appearances with which I am now acquainted.

There is no need to assume a general depression of the land surface or a subsequent elevation, although I do not wish to be understood to mean that a slight alteration of the general level may not have been associated with the causes already cited.

The horizontal encroachment of the sea in the direction of its present limits must have been very slow, and long enough in duration to admit of a complete transformation of the characteristic flora and fauna of the period.

When we reflect that the changes which take place within our own observation, with respect to existing animals and plants, are so slow and imperceptible that many otherwise intelligent minds have a rooted repugnance to recognise the facts which support the evolution hypothesis, we can, even better than in terms of years, estimate the immensity of time which separates the extinct species of vegetation of even the upper members of the lake system from the artificial shelly accumulations of recent origin which now alone remain to give evidence of the extinct Tasmanian race.

Such then is the story which I have been enabled to decipher from the clayey pages of this old lake of the Derwent. There are, however, myriads of leaves still uncut, unread, and I trust the members of this Society will assist in the future in adding to our knowledge regarding them.

DESCRIPTION OF TWO NEW MARINE SHELLS DREDGED OFF THREE HUT POINT, D'ENTRECASTEAUX CHANNEL, TASMANIA.

By C. E. Beddome.

[*Read* 10*th May*, 1881.]

Delphinula Johnstoni, n.s.

Shell minute, obliquely turbinate, nucleus smooth, whorls 3½ to 4, convex, latticed by spiral and diagonally transverse liræ; spiral liræ alternately fine and coarse, increasing in number towards aperture; base convex, the surface of which is also finely latticed; there is a well-defined, relatively broad, and somewhat concave band, transversely lirate, between last spiral liræ and the tortuous marginal rib of umbilicus, which latter joins and forms a partly closed channel at anterior angle of aperture. Aperture round, outer lip simple, obsoletely channelled at anterior and posterior angles. Inner lip reflexed and nearly concealing umbilicus and marginal rib.—Long. 2 mil. Lat. 2 mil.

This shell is closely allied to *D. tetragonostoma*, Tenison-Woods (fossil sp.), and forms an interesting link with the marine life of the tertiary period.

Hab., off Three Hut Point, D'Entrecasteaux channel, about 17 fathoms.

I have great pleasure in dedicating this species to my friend R. M. Johnston, Esq., who has interested himself so much in the present and past fauna of the country.

Leda Lefroyi, n.s.

Shell minute, thin, translucent, much compressed, narrowly elongate. Under the lens the exterior surface appears finely striated, radiately and concentrically, and is covered with a very delicate olive epidermis. Anterior side short, arched; posterior side with a gently curved depression, and produced into a long, narrow, tapering rostrum, which, upon the inside, is divided into two well-defined channels by a raised longitudinal callosity in both valves. Rostral area scarcely truncated at the tip. Umboes slightly elevated. Ventral margin slightly convex. Long. 9½ mil. (a line passing vertically through umboes would divide the length thus: anterior side 3 mil., post. $6\frac{1}{2}$ mil.) Depth 4 mil., thickness of both valves $1\frac{1}{2}$ mil. Teeth, post. 22, anterior 11.

This interesting shell is very distinct from any known species. It approaches the Patagonian Leda (L. Patagonica D'Orb.) in form, but it is much smaller and is sculptured differently.

Hab., off Three Hut Point, D'Entrecasteaux Channel, 10 fathoms.

I dedicate this species to His Excellency Lieut.-General Sir John Henry Lefroy, K.C.M.G., who has always taken an active interest in matters appertaining to natural history.

SUGGESTIONS FOR AN EXTENDED ELUCIDATION OF THE PLANTS OF TASMANIA.

By Baron Ferd. Von Mueller, K.C.M.G., M.D., F.R.S.

[*Read* 10*th May*, 1881.]

The rich and beautiful vegetation of Tasmania has had bestowed on its special investigation the talent of a leading phytographer of this age, Sir Joseph Hooker; and no other island of the same dimension can boast of the possession of two such superb volumes on its vegetation as the Flora Tasmanica, issued at the expense of the Admiralty with some support of the Local Government. The di- and mono- cotyledonous plants became thus mainly, though not exhaustively enumerated; very many also of the Acotyledoneæ, by the aid of Messrs. W. Wilson, M. Mitten, M. J. Berkeley, W. H. Harvey, and C. Babington, became largely recorded, so much so that in 1860, when the second volume of the Flora Tasmanica appeared, already over one thousand well-defined Cryptogams, exclusive of ferns, became recorded; thus, to Tasmania belongs the honour of having laid the foundation to the whole cryptogamic botany of Australia, a great majority of the Tasmanian species (as shown by subsequent and even previous researches) occurring in continental Australia also. Nevertheless our knowledge of the Acotyledoneæ of the Tasmanian colony must not by any means be regarded as complete; indeed, these lower vegetable organisms have there almost solely been collected by Messrs. Gunn and Archer, with a zeal beyond praise, through which their names will also in this department of science be for ever identified with the land of their adoption. Many regions within the Tasmanian dominion were not accessible to either of these investigators, and it is very likely that numerous species of Acotyledoneæ of the mainland of Australia could yet be traced into areas of Tasmania; now nearly 3,000 species of Cryptogams being known from extra-tropical Australia, a large share of these from collections formed by myself and by contributing friends since 1847. While to the phanerogamic flora of Tasmania it is not likely any very large access will be gained, unless from King's and Flinders' Islands, and the smaller isles of Bass' Straits, it may be predicted with confidence that the number of mosses, lichens, and algæ of Tasmania will be still considerably augmented by assiduous and persevering searches, and the number of fungi hitherto on record (and to which absolutely nothing has been added since Gunn's and Archer's exertions) might yet be doubled, if not even tripled. It is then to the fungi particularly that I would draw the attention of Tasmanian collectors, inasmuch as unlike the phanerogamic flora, the mycologic treasures of any country remain almost inexhaustible, fungi of many kinds occurring only at long intervals, at particular seasons, for very short whiles, and under capricious circumstances, whereas also frequently additions to the fungus-flora will occur by reason of the subtility of spores adherent to articles imported by trans-oceanic commerce. Thus, a fruitful field for research in this direction is still open also in Tasmania; and I would invoke the kind aid of any settlers who have taste for science, to gather, around their homes or in their travels, any kind of fungus which at any particular time may appear in any special locality. The process of drying fungi, even the brittle and succulent mushrooms of various kinds, is not difficult; such plants require merely to be placed near a fire, suspended in a little calico bag or net, after being sprinkled with kerosene to prevent the development of insects in the specimens. If some talented hand, especially that of ladies, will furnish coloured drawings along with the dried samples, the value of the collection would become greatly enhanced.

In these times of great efforts for general education each civilised country is striving to obtain a complete record of its natural productions; and the study of plants with all its utilitarian advantages, and all the intelligent pleasures which it affords, is cultivated now almost in all European schools from books gradually arisen through original field-researches. To keep pace with the progress of times in this respect on the other side of the globe, it is sought to complete the Universal Australian Floral Records, in which fungi must play an important *rôle* also, not to speak of mosses, lichens, and algæ, apt to be overlooked by amateur collectors, without whose aid no exhaustive searches can be made. If we turn even to the vegetation of trees, shrubs, herbs, grasses, sedges, etc., it may be assumed that about half a hundred could yet be added to those known from the Tasmanian territory, especially if a collector purposely visited the isles north of the main island during the spring season. As this could be accomplished by a very small expenditure, I venture to express a hope that the enlightened legislature of Tasmania, which was never even called on to support the issue of the seven volumes of the Flora Australiensis by Mr. Bentham and myself, from 1862 till 1877, will think fit to identify itself with the progress of this extensive publication in its continuating and supplemental volumes now under elaboration.

NOTES ON A SPECIES OF *EUCALYPTUS (E. HÆMASTOMA)* NOT HITHERTO RECORDED IN TASMANIA.

By T. Stephens, M.A., F.G.S.

[*Read* 10*th May*, 1881.]

Among the timber trees of this colony, a species of Eucalyptus, popularly known as the "gum-topped stringy bark," has long been familiar to saw mill proprietors and splitters; but through some strange oversight on the part of botanical collectors it has never hitherto been included in the Flora of Tasmania. Some two years ago, having been asked by a friend to ascertain its botanical name, I found that no tree answering its description had yet been scientifically recognised; and I at once sought the aid of friends in various parts of the island, requesting them to obtain specimens in flower for identification, but without success. In February last, I was fortunate enough to fall in with a well-grown tree in full blossom, specimens of which were forwarded to Baron Von Mueller with a result which will be best described by quoting from a letter which he has kindly forwarded me:—

"Your letter of 2nd April is before me concerning the Hemiphloious stringy bark tree, and after your lucid remark there can be no doubt that it is *Eucal. hæmastoma* of Sir James Smith, so that your circumspect exertions have been rewarded by the discovery of a species of Eucalyptus new to Tasmania. This species has latterly also been found in Gippsland, and I have been able to study more fully its characteristics. You could oblige me by noting the differences of the timber (as opportunity occurs), and also of the seedlings."

The chief peculiarity of this tree is that while the lower part of the butt is clothed with a thick fibrous bark closely resembling that of the common stringy bark (E. obliqua), the upper part, and the smaller limbs and branches, are quite smooth, whence its popular name. The timber is highly prized by splitters, and for general purposes it is described by many competent authorities as second only to the Blue Gum, though opinions seem to differ as to its durability. It is found in most parts of the Colony, and appears to grow as freely on the table land of the interior, reaching an altitude of not less than 3,000ft. above the sea, as along the coast line. The description of Eucalyptus hæmastoma in Bentham's Flora does not in all respects agree with the character of the tree as known in Tasmania, but the description will probably be revised by Baron Von Mueller.

AURIFEROUS COUNTRY AND GOLD-BEARING ROCKS.

By Charles E. Barnard, M.D., F.L.S.

[*Read* 10*th May*, 1881.]

The subject of my paper is one that cannot fail to prove of interest to this Society, seeing the great importance the gold-mining industry is assuming, and has already assumed, in the colony of Tasmania.

The advantages to be gained by fostering this industry in the colony need scarcely be dilated upon by me, as they are so patent to any one who will take the trouble to examine into the causes of the vast progress the Eastern colonies of Australia have made during the past quarter century. The numerous large towns and villages that dot this portion of the continent—the majority of them founded upon, or connected in some way with, the discovery of gold in their immediate neighbourhood—speak for themselves; and the immense impetus to trade, commerce, and immigration which it brings about shows what mining will do for a country, hitherto in a state of almost primeval solitude. But for this source of wealth, the major portion of these colonies would still have remained in a "state of nature"—one huge sheep run, with but a sparse population and scattered country villages.

With the magic touch of gold, all is changed. Everywhere over the land the busy miner is found digging and delving, and bringing to light the vast stores of hidden wealth. He is the pioneer of civilisation. In the solitudes of mountain and forest he seeks the precious metal, and should Dame Fortune reward his eager search by placing in his reach the long-sought-for golden treasure, the scene at once changes. Soon there springs up, as if by enchantment, first a village, which then gradually merges into a town as wealth succeeds wealth, and afterwards into a city, with all the comforts of life, and the culture of the civilised world.

For such a comparatively sparsely inhabited country as Tasmania, nothing then could be more advantageous than a large development of its gold-mining industry. True, she has other minerals in abundance besides gold; but no other metal presents such attractions to the ordinary miner. For in alluvial mining, the gold can be won without costly appliances and with merely unskilled labour. Any man who can handle a pick and shovel can go gold mining, and provided he "prospects" in "auriferous" country success is not unlikely to attend him. And so it is important to know by what indications country shows itself to be auriferous. In this continent gold is widely disseminated over a vast extent of country, and almost every day- fresh deposits in newly prospected districts are being discovered, as is lately instanced by the recent finding of gold in the interior of New South Wales, near its N.W. corner.

The aspect of auriferous country somewhat varies in different districts. Usually one sees groups of rounded hills, gentle undulations, and broad valleys between the hills, with creeks and rivers here and there. The soil is generally excellent, as is evidenced by the large forest trees and abundant grass.

Upon going over this country and examining the hills and outcropping rocks, one almost invariably finds the same characteristic features. The rocks are usually of a slaty character, tilted up into a more or less vertical position, and with a strike approaching N. and S. Close by are seen plutonic rocks, as granite, diorite, porphyry, etc., which are evidently the cause of the vertical position of the slates by intrusive action. Besides the slates, we find hills composed almost entirely of conglomerates, with beds of limestone and sandstone interspersed; and here and there we come upon long, low, narrow, rounded ridges, covered with dark rich soil, gently rising from its bed. These prove to be of volcanic basalt, which has flowed down the ancient valleys and watercourses from some Pliocene crater. Everywhere strewn around we come upon boulders of quartz of various sizes, which have become detached from the parent rock, lying hidden amongst the slates and granites.

The shaly rocks are found to vary in character, according to their position relative to the plutonic rocks. Some are soft and argillaceous, or of a sub-crystalline nature; others have become hard and silicious from the infiltration of silica in a state of solution through their substance. Others, again, are of a more crystalline character, and are called micaceous, talcose, or chloritic, according to the prevalence of the chief ingredient. No fossils can be seen in these slates even under the microscope, but their age has been proved to be lower Palœozoic by associated fossiliferous sandstones and limestones. It is of great importance to note the age of the sedimentary strata; for in this continent the richest gold-fields are found to be those whose out-cropping rocks are of Silurian age, with intrusive dykes of granite and greenstone. But gold-bearing rocks are not always necessarily confined to one particular age, as is evidenced in America, where auriferous quartz has been proved to be associated with later formations than the Silurian and Devonian.

Gold has evidently been deposited in common with other metals throughout all ages, even up to the present time. In Australia, though we find it associated only with the past, its deposition was co-existent with the dawn of creation of animal life. It belongs to the age of Invertebrata, when the inhabitants of the seas consisted only of echinoderms, trilobites, bivalves, cephalopods, etc.

It was also the first great change of type in animal life, when endo-skeletal creatures were succeeding the exo-skeletal in the order of things and process of evolution, for the remains of the earliest fishes are found in the upper beds of the Silurian formation.

It was at this time, then, that during active igneous eruptions and intrusions gold and other minerals were brought into association with the shaly sedimentary strata of the Silurian and Lower Devonian systems.

Gold has also been found in sedimentary rocks belonging to the carboniferous formation: but no doubt in these cases the gold has been derived from the original auriferous rocks of the older systems. Its presence here, though, teaches us that it is not impossible to find it in any formation, especially when that formation is derived from the denudation of Silurian strata.

There is one feature about these auriferous formations that is characteristic; they are more or less crystalline or metamorphosed, probably from the action of heat under great pressure. But it is found that the less crystallised they are, the more auriferous they appear.

As regards the matrix of gold, quartz is almost universally the most prevalent. And wherever it occurs it is always in veins or reefs, occupying fissures and rents, either in the primary rocks, or in the plutonic intrusive dykes.

But gold is also found in other rocks besides quartz. Hornblendic granites and diorites, or a greenstone composed of hornblende and feldspar, are most commonly the source of the metal. Serpentine, too, has been worked profitably, and yielded it in abundance, even though the gold was not visible to the naked eye. But whenever these rocks are found in conjunction with Silurian slates, gold deposits may be confidently looked for, especially if quartz veins are found also in connection therewith.

It is by the disintegration and denudation of these rocks that alluvial drift becomes loaded with gold, which is washed down into the valleys and gullies below. And where the dykes of diorite or granite forms the bed rock of the "lead," the gold is generally in greatest abundance—it being retained or arrested in the joints and crevices of the denuded rock. On each side the drift or "wash" contains only the finer or less weighty particles.

The discovery of rich auriferous reefs is, in many instances, brought about by the removal of the overlying "wash" or drift; and some of the most flourishing reefing districts of the present time in Australia were originally only worked for the alluvial gold. When a reef is laid bare by the miner under these circumstances, there is by far greater likelihood for it to be payably auriferous than otherwise, and the richness of the overlying drift is in a measure a test of that of the vein of quartz thus exposed. So every alluvial miner is strongly advised to search diligently for hidden quartz veins in the bed-rock of his claim. The same, in fact, may be said of all mineral veins. The drift containing the mineral can only have been derived from some neighbouring vein, which probably, by "stripping," would be discovered if persevering attempts were made to search for it. Alluvial mining, then, leads to quartz-mining, and in the most successful instances is the only prelude to it. I recommend this fact to be noted by the capitalists of Tasmania, when contemplating investment in gold-mining; for I am afraid vast sums are spent in quartz reefs that can never be otherwise than unproductive. The most permanently payable auriferous reefs seldom contain gold alone, but are usually intermingled with iron and copper pyrites and other sulphides. Gold, too, is rarely found in a pure state, but almost invariably alloyed with a varying percentage of silver. Pyritous quartz is a good indication of the presence of gold; but in this case the precious metal is so tightly bound up in the sulphides as to be only with difficulty extracted therefrom. And it is a singular fact, that, frequently when gold is proved by chemical analysis to be present in this kind of stone in tolerably large proportion, none is visible on the surface to the naked eye. It is so finely divided, and so closely "held in bondage" by the pyrites, as to be rendered invisible. When this pyritous mineral is decomposed by a process of oxidation, the gold is then, and then only, liberated from its connection therewith. In these instances the quartz presents a porous or "honeycombed" appearance, and so rendered more easily workable. When gold is found in hard compact quartz veins, and is even quite visible thereon to the eye, as a rule these reefs are not always of a very permanent character.

In alluvial deposits the gold is also found associated with various minerals that have evidently been derived from the same mineral vein—such as platinum, magnetic iron, chrome iron, and tin oxide, as well as quartz, zircon, topaz, and even the diamond.

Miners, as a general rule, restrict their search to the one metal—gold, discarding all others that may appear in their "wash." So probably many valuable metals and precious stones are lost that otherwise could be saved with profit.

The occurrence of gold in quartz veins, and the presence of the quartz veins themselves in plutonic and metamorphic rocks, can be explained by chemical agency. The mineral veins must have been deposited during a very disturbed period; but subsequently to the intrusive action of the plutonic rocks, and the metamorphosis of the argillaceous strata contiguous thereto. Intense heat must have prevailed, while the semi-liquid fused masses uplifted, tilted up and transmuted the Silurian formations, forming dykes by cutting through them. During the contractions that must have ensued on cooling, fissures would be formed both in the intrusive dykes and the sedimentary rocks, which would generally be across the direction of the cooling mass. These fissures would then become filled with infiltrating hot solutions of silica and minerals. Upon further cooling the silica would be deposited and the minerals, including gold, would likewise be precipitated, or gradually crystallise, and become intermingled with the silica mass.

The solutions of these minerals would be effected in this way. During the prevalence of the intense heat that must have been everywhere cotemporary with the igneous action of the period, the temperature of all waters, vapours, and gases would rise excessively high by reason of the enormous pressure to which they would be subjected below at great depths. All would be chaos: every substance would be subjected to intense chemical agencies, and be continually undergoing change. The hot waters and vapours would be dissolving what was soluble, such as the alkalies, silica, and all the compounds of the metals. These latter would be formed by gases and acids of intense chemical activity that would be present, such as chlorine, sulphuretted hydrogen, nitric and hydrochloric acids. These would act and re-act upon all the minerals they came into contact with, and the compounds thus formed would become intermingled with the hot solution of silica; and so be deposited with it in whatever fissure it was poured into. It would thus appear as a mineral vein upon cooling.

The frequent appearance of gold in a finely divided state and enveloped in iron pyrites can also be accounted for by chemical action. When a solution of sulphate of iron comes into contact with a solution of gold, the latter is precipitated as a very fine powder of a dark colour, and the sulphate decomposed. Gold would be dissolved by the chlorine of the nitric and hydrochloric acids present or in its free state, while the sulphate of iron would be formed by the oxidation of the sulphide which is always so abundant. In this way the invisibility of gold when disguised by iron pyrites can be accounted for. But gold being volatile under very high pressure, and at a high temperature, could also be sublimed and condensed similarly to other metals which are conveyed in this way.

Besides the minerals, gold is found associated with remains of the animal and vegetable kingdoms. These, though of no commercial value, yet are of no less interest and importance. By their means the age of the auriferous drift can be relatively approximated, and when found over a large tract of country they can be compared with one another.

The animals whose bones and teeth are occasionally found belong entirely to the past. They evidently must have been of larger growth than is seen now. They comprise huge marsupials and immense birds. The fossil vegetable remains, as leaves, fruits, stems of trees, etc., also indicate an ancient flora that has almost entirely passed away. In a few instances some modern genera resemble those that are found fossil but only in a modified form. The majority of them belong to extinct genera; and all are of Tertiary age—probably pliocene or even miocene. As these organic remains have so frequently been found in auriferous alluvial drift, the miner in these colonies is encouraged to proceed in his search when he comes upon a layer of fossil leaves, fruits, etc., especially if these lie beneath Tertiary basalt.

During the pliocene period, this land must have been the scene of intense igneous action, as is evidenced by the immense flows of basalt that are met with throughout long stretches of country. The course of the ancient valleys and watercourses can be traced by observing the direction of the basalt; for as the semi-liquid lava would flow where there was least resistance, it would naturally take the easy descent down low-lying valleys and river-beds, and in this way they can be traced for miles. The miner, then, should not be discouraged or deterred from sinking by finding basaltic rock in his shaft, for there is every probability of "payable" auriferous wash being found beneath the massive layer.

In conclusion, while sincerely rejoicing at the prosperous condition of several of the gold mines of Tasmania, I cannot contemplate but with serious misgiving the "mining mania" that has apparently seized the Tasmanian public, especially in the North. Rash investments in mythical quartz reefs is not legitimate mining, and can only lead in many instances to disaster, as happened at Hill-end and Tambaroora, in New South Wales, some few years back.

I sincerely hope it will not be so; but would wish to see every confiding shareholder gladdened by dividends to his heart's content.

There can be no doubt that Tasmania has unbounded wealth in her mines; and I feel assured that in their development she has the means of rising, Phœnix-like, from the ashes of her former comparative poverty to a dazzling height of permanent prosperity.

TYPE SPECIES OF TASMANIAN SHELLS UNRECORDED IN THE "CENSUS OF TASMANIAN SHELLS."

By Professor R. Tate, Assoc. Lin. Soc., F.G.S., &c.

[*Read* 14*th June*, 1881.]

Having, in the course of my researches in the bibliography of Australian Mollusca, noted that some specific names, founded on Tasmanian types, are not referred to in the conchological papers contained in recent issues of the Society's transactions, I have thought some utility may be served by their publication. They are not necessarily addenda to the "Census" by the Rev. J. E. Tenison-Woods, as it remains to be ascertained whether they are applicable or not to good species, and if to good species then whether they have priority or not over others already enumerated in the "Census." This task I relegate to the author—a "Revised Census."

To the following list I have appended references to the authorities for the specific names, and the localities of the type-specimens:—

Columbella rosacea, *Reeve,* Icon. Conc., (?)—*C. semiconvexa.* Tasmania.

Cerithium Diemense, *Quoy* and *Gaimard,* Voy. Astrolabe to 55, f. 11-13. Tasmania.

Cerithium dubium, *Sowerby,* Mes. Con., sp. 62; and *Reeve,* Icon. Con. t. 12, f. 78 (has priority over *C. monachus, Crosse),* Tasmania.

HYDROBIA GUNNII, *Frauenfeld*, Zool. and Bot. Gess., Wien, xv., t. 8, 1865. Tasmania.

AMNICOLA DIEMENSE, *Frauenfeld*, op. cit., t. 10. Tasmania.

PLANORBIS AUSTRALIANUS, *Martens*, Paetel. cat. der. Conch., p. 116, 1873. Tasmania.

AURICULA AUSTRALIS, op. cit. t. 13, f. 34-38 (*Syn. ophicardelus cornea*, Swainson). Hobart.

MESODESMA DIEMENSIS, *Quoy and Gaimard*, op. cit., t. 82, f. 14-15. Hobart.

TELLINA UMBONELLA, *Lamarck*, an. s. vert. vi. p. 531, King's Island.

CORBICULA BRUNNEA, *Prime*, Proc. Acad., Sc. Philad., p. 126, 1861. Tasmania.

ARCA SEMITORTA, *Lamarck*, op. cit., p. 37. Tasmania.

ARCA PISTACHIA, *Lamarck*, p. cit., p. 41. King's Island.

ARCA SQUAMOSA, *Lamarck*, op. cit., p. 45. King's Island.

CRENATULA MODIOLARIS, *Lamarck*, op. cit., p. 137. Maria Island.

MELEAGRINA ALBA, *Lamarck*, op. cit., p. 152. D'Entrecasteaux Channel, Tasmania.

The following have been published subsequent to the issue of the " Census " :—

TROCHUS BAUDINI, *Fischer*, Journ. de Conch., 1878. King's Island.

PECTUNDULUS ORBICULARIS, *Angas*, P. Z. S., 1879, p. 420, to 35, f. 9.—*P. flabellatus*, Woods. Bass' Straits, Tasmania.

NOTES ON A SPECIES OF *ZIERIA* NEW TO TASMANIA.

BY AUGUSTUS SIMSON, F.L.S.

[*Read 14th June*, 1881.]

Zieria veronica, F. Von Mueller, Trans. Phil. Soc., Victoria, i. p. 11., 1854.

I first discovered this addition to our list of the Tasmanian Flora in October, 1879, near the Ruby Tin Mining Company's, claim, George's Bay.

There were two small specimens, one bearing a blossom, growing in very light, sandy soil, in company with *Astroloma pinifolia*, and other more common plants.

I made it out to belong to the order *Rutaceæ*, but could not identify it with any of the Tasmanian species of that order, recorded in the Rev. Mr. Spicer's handbook, and felt sure that it was an addition to our Flora, if not altogether a new plant.

Last October, in travelling to George's Bay, I noticed a patch of the same plants. There were some dozens, all growing close together, about 150 yards from the George's Bay side of the Scamander Bridge.

I was unfortunately unable to obtain access to a copy of Bentham's Flora Australiensis, to assist me in identifying the plant, so sent specimens to Dr. Mueller by Mr. Thos. Stephens, and received from the Baron the identification given below.

As I had camped for some time near where I first found the plant, and on the day of finding it had had a good search round for more specimens, without success, I conclude it is of rare occurrence, especially as there are few spots near George's Bay, and along the road between Falmouth and George's Bay, which I have not frequently carefully searched for botanical specimens, without ever before finding it.

The largest specimens were about six inches in height; some but slightly branched, others like small dense shrubs.

Extract from Baron von Mueller's letter of the 9th May, 1881:—

"This most interesting addition to our collections of Tasmanian plants, now *Zieria veronica*, was already described by me in the transactions of the Phil. Soc. of Victoria i., p. 11, in 1854. This again shows, like the discovery of *Verbena officinalis* near Launceston, that even the localities near largely inhabited settlements in your main island are not yet exhaustively searched for plants: how much may thus yet turn up if the unsettled places in King's and Flinder's Islands together with your smaller isles become well searched, not to speak of interior portions of N.W. Tasmania, with its botanically almost unexplored alpine heights."

THE IMPROVEMENT OF THE QUEEN'S DOMAIN.

By E. J. Crouch, M.R.C.S. Eng.

Read 14th June, 1881.

This is not the first time that the subject on which I intend to read a paper (namely, the Queen's Domain, and suggestions for its improvement) has been before your Society. I may mention that this matter was brought before your notice in the year 1875, when it was very warmly discussed by the public at that time, and several letters were read before your Society; still, I regret to say, very little has been done since then to beautify a spot that is certainly so well adapted to be a park and recreation ground for the people, though in 1880 light was once more thrown on the subject, for a petition was numerously signed by many influential citizens, and laid before the House, when, through the exertions of members of the same, the sum of £200 was voted for improvements in the Domain; still nothing of any importance up to the present time has been done to effect the desired improvements. I, therefore, feel it my duty to again attempt to awake the interest of the public in this national undertaking, and hope that from any discussion which may take place after the reading of this paper some practical and lasting results will follow.

Among the minor improvements that have taken place this last year, I may mention the work done by prison labour in removing imbedded stones and levelling the ground in the neighbourhood of the Queen's Battery, together with the clearance of surface stones in other parts of the Domain. Another great improvement was the removal, or rather softening down, of the rugged quarry near the High School, which could be seen from most parts of the city of Hobart—I shall have reason to allude to this quarry in my remarks on improvements—and, lastly, the planting out of some young promising trees in the neighbourhood of the Royal Society's Gardens. This is certainly a step in the right direction, and augurs well for the future. Also the preventing of cattle from grazing in the Domain. I think that some modification of this will very likely have to take place, as the long grass will be liable in the summer months to accidental causes of fire.

I now bring before your notice some suggestions in regard to the future.

(1.) That a committee of the Royal Society be appointed to wait on the Minister of Lands and explain their views with regard to future improvements in the Domain, these to be carried out under their control, permission being given them to draw up a rough scheme or plan in order that all work connected with the improvement of the Queen's Domain might be done under a distinct system.

(2.) That such committee should receive an annual grant of, at the very least, £200 from Government. This sum was voted for improvement of the Domain only last session.

(3.) That the quarry in front of Government House be at once levelled in a similar manner to that already done near the High School, and arranged as a nursery, where plants, which might be received from the gardens or elsewhere, too young to be planted at once in the Domain, might be grown on until sufficiently strong to be removed.

(4.) That prison labour should at once commence near the present drive round the Domain by removing the unsightly stumps and roots of trees; then trench and prepare any places capable of growing a variety of deciduous trees or shrubs ornamental in their character, such places having been previously pointed out by the committee. Subjoined is enumerated a list of deciduous trees which would be suitable for forming avenues, &c.:—*Ulmus campestris* (common English Elm), *Ulmus montana* (Broad-leaved or Mountain Elm), *Ulmus stricta* (upright growing, very beautiful), *Quercus rubra* (Red Oak), *Quercus lanciniata* (Cut-leaved Oak), *Quercus coccinia* (Scarlet Oak), *Quercus pedunculata* (common Oak), *Fagus sylvatica* (common Beech), *Fagus atro-rubus* (Dark Red Beech, or Copper Beech), *Æsculus hippocastanum* (Horse Chestnut), *Æsculus hippocastanum* (Scarlet Chestnut), *Betula alba* (White Birch), *Betula rubra* (Red Birch) *Platanus Orientalis* (Plane), *Platanus palmata* (Palm-leaved Plane).

(5.) Amongst special classes of plants for undergrowth, I would mention the varieties of Rhododendron, which grow freely, have fine foliage, propagate rapidly, and afford protection to indigenous and other birds. Whilst especially wishing for English and foreign foliage trees and plants, I, above all, would urge upon the Royal Society the necessity of making parts of the Domain typical of Tasmania generally. To follow out this idea, I would point out how attractive the rough uncared for sweetbriar vale above the gardens would be if properly arranged and planted with native shrubs, such as the Myrtle, Native Laurel, Blackwood, Sassafras, and others.

(6.) Another suggestion to render the present drives round the Domain more attractive, surface stones having been removed, would be to sow the ground to a certain distance back with a mixture of English grass and Dutch clover (white), and *Lotus corniculatus* and *Tormentilla reptans*, thus presenting a greensward to the passers-by.

(7.) Fine views might also be opened out by removing trees, thus forming avenues through which some of the most lovely scenery in the island might be viewed. As this affects the present generation, I look upon it as one of the most important suggestions, and in order that the best advice might be obtained to bring about this desirable end, I would propose that this Society should offer a premium for the most appropriate plans that might be prepared for the improvement of the Domain, such plans to become the property of the committee. A lithographic plan of the Domain should be supplied to applicants wishing to compete for the premium. This idea might induce local talent to come forward, and thus prevent us from crossing the water to receive advice.

(8.) That prison labour should commence making a road from a point known as Chapman's drive to wind round the hill, until the highest part of the Domain be reached, thus enabling the citizens of Hobart and visitors from the colonies to view from their carriages the fine scenery of the valley of the Derwent. I may mention, along this proposed route the Duke of Edinburgh was taken in order that he might view the lovely panorama.

(9.) I should advise that a donation and presentation list, under the heading of "For improvements to Queen's Domain," be opened, to enable the citizens of Hobart and the public generally to help forward this national undertaking.

In conclusion, I hope that by the next monthly meeting of this Society the Domain Committee will have been formed, a sketch plan approved of, and all that are willing and able enlisted in this noble undertaking.

ON THE QUESTION OF ESTABLISHING IN THE ROYAL SOCIETY'S GARDENS A CLASS-GROUND, OR SYSTEMATIC ARRANGEMENT ILLUSTRATING THE CLASSIFICATION OF PLANTS ACCORDING TO THE NATURAL ORDERS.

By Thomas Stephens, M.A., F.G.S., V.P.

[*Read 8th August*, 1881.]

Some three years ago I brought under the consideration of the Council the question of setting apart a small portion of the Gardens, in a central position, for the cultivation of selected plants, illustrating the principal Natural Orders, and arranged according to their botanical classification. At that time we had the advantage of the presence and co-operation of the late Rev. W. W. Spicer, and the Council gladly accepted his offer to take the matter in hand, but after some preliminary inquiry it appeared that the planning and completion of the new entrance to the Gardens would occupy all the labour under Mr. Abbott's direction for a long time, and no further action was taken. Some other obstacles were pointed out by Mr. Abbott at the time, but I subsequently learned that these had reference to the question of forming a collection of the indigenous plants of Tasmania, which was not then contemplated by the Council.

In August of last year the subject was again mooted by Mr. Barnard in connection with other suggested improvements, but there was no definite plan before the Council, and nothing more was done until a few months ago, when I received a letter from Dr. Agnew, giving an interesting account of a visit to the Botanic Gardens at Adelaide, and especially calling attention to a Class-ground, planned by Dr. Schomburgk, which he thought might be imitated, with necessary modifications, and on a more modest scale, in our own Gardens.

The following is Dr. Agnew's description, which he requested me to bring under the notice of the Council:—"Round a centre, which may be a circular seat, &c., three zones or beds, each about 24ft. in width, are laid out. These zones are separated by narrow gravel walks, and each zone is subdivided into a great number of lesser beds, the proximal end of each being about 6ft. wide, the peripheral boundary or a segment of a larger circle being of course larger. Each of these little beds—6ft. by 24ft., more or less—is devoted to one Order in Botany, a bold label specifying the Order being displayed at the narrow proximal end. Possibly, square beds could be laid out more cheaply, but this plan, which is probably due to the mature experience of Dr. Schomburgk, is most convenient, as you can see so much in walking round the small central circle. No doubt, if required, Dr. Schomburgk would gladly give full particulars, and would also say if the whole was a success."

In reply to a request from the Council for further information, Dr. Schomburgk has kindly furnished a sketch plan, with a letter describing the general arrangement of the Class-grounds, which is hereto appended.

The question is now submitted for discussion by the Fellows of the Society. If they are of opinion that an attempt should be made to imitate, if only after a humble fashion, the example afforded by the Adelaide Gardens, not to mention innumerable other institutions of like character in other countries, the Council will no doubt do its best, with Mr. Abbott's advice and assistance, to give some practical effect to the scheme. It should be clearly understood that it is not proposed either to interfere in any way with the general plan of the Gardens, or to add to the cost of their annual maintenance. Only a small space is required, for in selecting plants care would be taken to choose only those which can be grown within narrow limits, and some Orders would not be represented at all. The work also could go on by slow degrees. The importance of encouraging the study of Botany by some practical teaching of this kind, a little of which will do more than a library of books, will be readily admitted; and a recognition of the fact that the Royal Society's Gardens are designed to afford some such educational facilities will certainly not lessen their claim to support at the cost of the State.

The following is the letter referred to :—

"I enclose a rough sketch of our Class-ground. A symmetrical figure has been chosen in order to afford an oversight over the whole.

"In the middle of the main walk a large basin with a fountain is built, which contains the aquatic plants of the Orders of the Nymphæaceæ, Vallisneriaceæ, Butomaceæ, Alismaceæ, &c.

"On both sides of this main walk extend the Monocotyledonous plants.

"The Class-ground represents 130 Orders by 750 Genera. Every Order is represented by from four to twelve Genera.

"The sequence of the Classes and Orders followed is that of the late Professor Adrien de Jussieu, son of Antoine-Laurent de Jussieu, the founder of the Natural Order of Plants.

"Every Order is divided from the other by a strip of green turf, bordered by narrow bricks, to prevent the spreading of the grass in the beds.

"Classes and Orders are written in conspicuous white letters on large square iron labels painted black; the names of the plants on smaller labels of the same colour. Only the sub-classes of the Dicotyledons are noted on the labels, viz., Polypetalæ, Monopetalæ, Monochlamydeæ, and Gymnospermeæ, &c., with an abbreviated explanation of the meaning of these names.

"It is almost an impossibility to lay out a system ground properly; it will and must be always deficient in completeness, especially in cooler climates. The representatives of a good many Orders being solely tropical plants, such Orders cannot be always represented. Another difficulty is also the selecting and grouping of the Genera of each Order, as some become large umbrageous trees, while others are only small shrubs, or perennials, and thus one will outgrow the other.

"I am sorry I have not one copy left of the plan of the Garden published in 1873.

"Hoping that this rough sketch will be of some use to you.

"T. Schomburgk,

"Director."

ON THE MAGNETIC VARIATION OF HOBART.

By His Excellency Sir J. H. Lefroy, K.C.M.G., C.B., F.R.S.

Read 12*th Sept.*, 1881.

It is, I believe, about 18 years since there has been determination of the magnetic variation here, at all events published. It may have been, and very probably was, observed by the American Transit of Venus Expedition in 1874; but, if so, it does not appear to have been published. The most recent authentic observation I can find is that of Dr. Geo. Neumeyer in April, 1863, as included in his "Results of the Magnetic Survey of the Colony of Victoria."* He made it 10deg. 25·15min. E.

Dr. Neumeyer's station appears to have been in the field to the south of the approach to Government House. He describes the spot as 9·4 chains, or 206yds., south of the former Observatory, and S. 4deg. 27·76min. E. of it.

Captain J. H. Kay, R.N., the former director of the Observatory, made it 9deg. 57·2min. E., reduced to mean scale reading, for the mean epoch January 1, 1843, and inferred the annual rate of increase to be 1·46min., at which rate it should have been 10deg. 26·8min. E. in April, 1863, and 10deg. 52·7min. E. in January last.

I make it a considerably less quantity, and the inference is that it has passed its maximum amount, and is now somewhat rapidly decreasing. The annual rate of change from 1843 to 1863 was, in fact, rather more rapid than Captain Kay supposed, being 1·9min.

My observations have been made with a 4in. prismatic compass, the property of Kew Observatory. The limb is divided to degrees on silver. It has one directing magnet, and is a good instrument of the kind, although inferior to the declinometers now carried by scientific travellers. Moreover, I have laboured under the disadvantage of not knowing my time with absolute accuracy. I have been in the habit of setting my watch, a good lever one with compensation balance, by Mr. Abbott's regulator, which is kept to time I am told by transits, and I do not think it has in these observations been many seconds from the truth. I hope, therefore, that while individual results differ more than I could wish, the mean of the whole may be relied upon.

The following are my results:—They were observed on the site of the Observatory of 1840-1848, which appears to have been judiciously selected as free from local effects. The sandstone here crops out, forming an island surrounded by basalt, which, however, does not approach within 100yds., and is then of moderate thickness.

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* Mannheim. J. Schneider, 1869. 4to.

OBSERVATIONS OF MAGNETIC VARIATION AT THE HOBARTON OBSERVATORY OF 1841-8, EACH THE MEAN OF 5 SIGHTS.

1881.	Time.			Variations E.			Diff. from mean.	
		No.	Hour.	Obsv'd.	Corrd.	Corrd.	E.	W.
			h. m.	° ′	′	° ′		′
Jan. 10..	P.M.	I.	6 4	8 25·3	— 1·9	8 23·4	—	25·9
,,	,,	II.	6 9	8 21·8	— 1·9	8 19·9	—	29 9
,,	,,	III.	6 15	8 36·2	— 1·9	8 34·3	—	15·0
,,	,,	IV.	6 20	8 54·0	— 1·8	8 52·2	2·9	—
,,	,,	V.	6 25	8 52·0	— 1·8	8 50·2	0·9	—
March 22	A.M.	I.	8 36	8 49·3	+ 3·5	8 52·8	3·5	—
,,	,,	II.	8 38	8 56·4	+ 3·5	8 59·9	10·6	—
April 4*..	A.M.	I.	8 50	9 34·0	+ 2·7	9 36·7	47·4	—
April 16*	P.M.	I.	3 3	8 46·8	— 4·1	8 42·7	—	6·6
April 18*	A.M.	I.	8 36	8 59·0	+ 2·5	9 1·5	12·2	—
Sept. 9...	P.M.	I.	4 39	8 42·6	— 2 8	8 39·8	—	9·5
Sept. 10*	A.M.	I.	8 8	8 36·6	+ 2·3	8 38·9	—	10·4
,,	,,	II.	8 17	8 59·6	+ 2·6	9 2·2	12·9	—
,,	,,	III.	8 32	8 54·5	+ 2·8	8 57·3	8·0	—
						8 49·3		

* These were observed by Mr. G. A. Lefroy.

I think there must have been an error in the time on the 4th April, and it was not observed on quite the same spot as the rest, but I do not feel at liberty to omit the observation. The rest are very fairly accordant. As we know the diurnal movement here, I have applied the proper correction. The mean of the whole is 8deg. 49·3min. east.

Being desirous of ascertaining whether any local influence could be supposed to cause the variation at the Observatory to be less than it should be, I repeated the observations at Lady Franklin's Museum, and at, or near, the Cascades Brewery.* These two stations were selected as likely to show the influence of the massive basaltic formation capping Mount Wellington, if it is capable of exerting any at two miles distant. The bold cliffs called the Organ Pipes bear about W. 60deg. S. from the Museum, and W. 15deg. S. from the Brewery. These stations are about two miles apart, with hills between them. Mean of two sets on the 22nd January at the Museum, 8deg. 59min. S.E.; mean of four sets on the 28th January at the Brewery, 8deg. 35·0min. E. We have here concurrent evidence that the variation is considerably less than it must have been in 1863. To which I might add an observation at Port Arthur, taken on the 27th January, but, as it was a hurried one, I will only say that it also points to a decrease.†

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* In the field beyond, near the gate.

† The result was 10deg. 43·9min.

On comparing Dr. Neumeyer's chart for the epoch 1858-1864 with the revised curves of equal magnetic variation issued by the Admiralty about a year ago, we find strong evidence to the same effect. The Admiralty curves are a generalisation from a vast body of observations collected at the Hydrographer's Office, and may possibly not include any recent observations in Tasmania. Indeed, I have reason to know that they do not. Dr. Neumeyer's Hobarton curve of 10deg. 25min. E. for 1863, falls between the curves of 9deg. and 10deg. E. on this map, which is dated 1880, somewhere near 9deg. 45min. I have inserted these lines in a map which is on the table. We may gather from the whole evidence that the line of no variation, which cuts West Australia, is now moving eastward. Twenty years ago it was moving westward. I am indebted to Mr. Calder for an extremely curious extract from Tasman's journal, which proves that, in his time, it was far to the westward again. That great navigator notes, in December, 1642, "*when you come from west, and find the N.W. variation suddenly decrease, you may then look out for the land. Near the coast here the needle points due north.*"

That is to say, the line of no variation which at present cuts the parallel of 42deg. S., in 130deg. E., or thereabouts, was in 1642 very near the West Coast of Tasmania, and, therefore, fully 14deg. more easterly than it is now. The variation of the needle is a matter of greater practical consequence here than is generally supposed. The district surveyors throughout the colony, I am told, make use of compass bearings only—all grants of land are laid out by them; all boundaries defined by them. Now, if I am thus informed correctly, any gentleman who may have had given to him in 1863 a line due N. as his boundary, if he ran it again by compass to-morrow, would find himself at the end of one mile, 50 yards off the line.

This consideration will show plainly that the compass ought never to be trusted for such purposes. There are many other considerations which point to the necessity of putting the surveys of this colony upon a different basis. I alluded to this pointedly in my address to you in April last. I will only now express my full concurrence with the weighty opinion expressed, I observe, by our colleague and Vice-President, Mr. Stephens, in a correspondence just laid before Parliament,* that, "if it be long delayed inextricable confusion will be the probable, if not certain, result."

Postscript.—In the discussion which ensued upon this paper, one of the Fellows present remarked that the variation is still increasing at Melbourne, and I thought it due to the Royal

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* Sessional paper, No. 101, New Map of Tasmania.

Society to withhold the paper from publication until I could ascertain if such is the fact. I have pleasure in annexing an extract from a letter since received from Professor Ellery, dated September 19, which is conclusive to the contrary:—

"You will find your magnetical results nearly correct. The magnetic declination has been decreasing since 1865, roughly at the rate of 2min. per annum. In 1866 the declination was 8deg. 40min. E.; now it is 8deg. 6min. (Signed) ROBT. J. ELLERY."

As the variation at Melbourne was 8deg. 42min. in 1860, and 8deg. 40min. in 1866, we may take it as 8deg. 41min. in 1863, or 1deg. 44min. *less* than the variation at Hobart at that date. If my mean result is correct, the difference now is only 43min. It is, therefore, to be wished that the observations be repeated with a better instrument.

REMARKS ON THE SCAMANDER GOLDFIELD.

By S. H. WINTLE, F.L.S.

[*Read* 10*th Oct.*, 1881.]

The Scamander Goldfield, which was discovered about two years ago, is distant from George's Bay between 15 miles and 16 miles in a westerly direction. The country between the Bay on the N.E. and the Scamander River, where it is crossed by the bridle track to the Black Boy, consists of coarse porphyritic granite for the most part, and comprises the George's Bay tin-mining district in the County of Cornwall. A well-defined boundary, separating the granite from the older palæozoic formations, is formed, for a distance of some miles, by the Scamander River. Indeed, so well defined is the line of demarcation that at the north-eastern confines of the Goldfield the granite occupies the fording* place on one side without any sedimentary rock being visible *in situ*, while on the opposite side of the river, a distance of not more than 20 yards, no granite whatever is seen, it being completely covered up by palæozoic sedimentary rock, consisting of hard, cherty, altered sandstone, which in places assumes a slightly gneissose character. This, in turn, in the higher ground, gives place to very laminated, fissile clay schists or slate, so highly inclined as to be almost vertical. The Goldfield is situated at the head of Scamander River, in a valley bounded on three sides by very steep, lofty hills of slate, having a mean angle of about 40deg. As far as is known at the present time, the auriferous area is limited in

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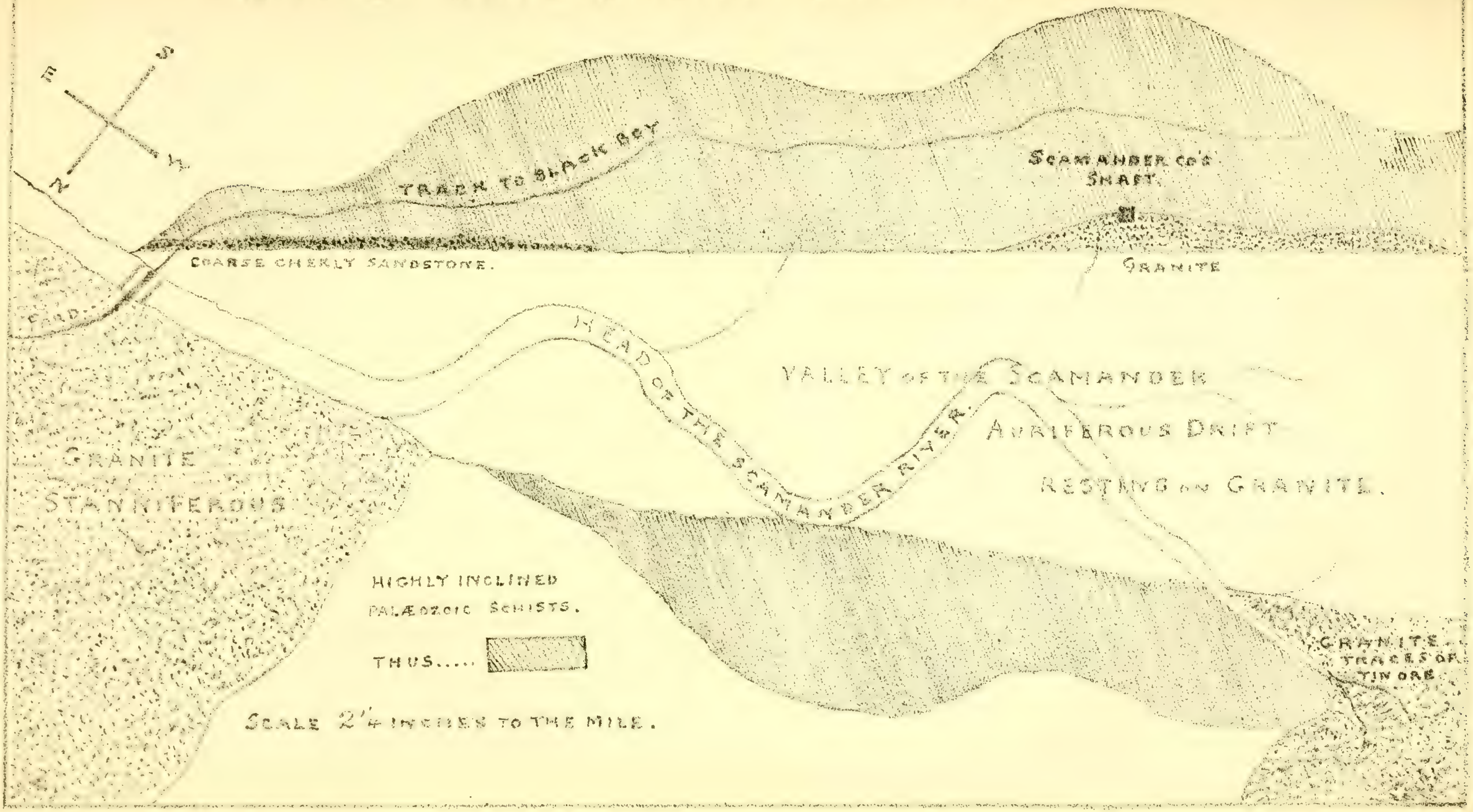
* See sketch plan.

SKETCH PLAN OF THE SCAMANDER GOLD FIELD.



extent, for at a distance of about 3½ miles from the granite country at its north-eastern boundary, and at the fountain head of the river a syenitic granite again obtains, with small quantities of tin ore in the bed of the streams, and in the gullies, but with hardly any traces of Gold associated. All along the course of the river, from the fording place on the Black Boy track, Gold can be obtained in the drift at a mean depth of four feet from the surface, but those who worked the river bed in places, and its tributaries, failed to make it pay, notwithstanding that the Gold is coarse as a rule, pieces having been obtained of several pennyweights. As it is almost impossible to wash a dish of dirt and not get several specks of Gold, I am of opinion that the failure to make the alluvial operations remunerative is to be ascribed more to the mode of working, and the appliances employed, than to the poverty of the washdirt. This alluvial Gold has been derived from veins and lodes which traverse the hills near their base in conjunction with the granite, for at the base of these hills the palæozoic slate and sandstone appear to have no great thickness. In many places where trenches have been cut through these sedimentary strata in searching for quartz lodes, the granite, in a much decomposed state, has been reached at a few feet. The slate and sandstone in the hills is ramified by a reticulation of small quartz veins and strings, many of which are rich in Gold, and as a consequence the surface of the country is covered to a considerable extent with detached fragments of quartz. In the Scamander Company's claim a rich vein of auriferous quartz has been exposed. It traverses both granite and slate (See specimen No. 1). The quartz is highly charged with arseniurets and sulphurets of iron, and frequently with galena, which is argentiferous. The granite in this locality has, without any doubt, been erupted subsequent to the deposition of the stratified formations reposing upon it as elsewhere in Tasmania, although I am aware that one observer, at least, entertains an opposite view with regard to the granite in the Ben Lomond district. The fact of the quartz reefs traversing both granite and overlying sedimentary formations, is, to my mind, of exceeding interest, inasmuch as it affords proof that such lodes or reefs having a subsequent origin would imply a greater antiquity for the granite of this part of the island than I was inclined to ascribe to it. As far as my observations have extended, and which have been conducted on three different occasions, I find that the quartz lode is smaller or "pinched" where it traverses the slate "country" than the same vein is where it runs through the decomposed granite. In the Scamander Company's shaft, which is down about 30ft. in soft, decomposed granite (See specimen No. 2), the lode is nearly thrice the size it is in the slate about 15 yards away; but whether it will maintain its present size, or increase it at a greater depth where the granite will assume the crystalline condition, or pinch, can only be ascertained by future operations. At the present depth the granite begins to assume the crystalline character; large, rounded blocks, which have escaped decomposition by exfoliation, having been brought to the surface. The quartz at this depth, for the shaft has been sunk on the vein, is from 10in. to 12in. wide, and a recent mortar crushing in Launceston gave the satisfactory yield of 4½ ounces of Gold to the ton. The Gold is plainly visible in nearly every piece of quartz, and I never crushed a piece without obtaining an excellent prospect.

Comparatively little prospecting has been done in this district; not more than nine 10-acre sections have been applied for, and consequently comparatively little is known of the extent of the auriferous country. I am of opinion that it will eventually be found to be a moderately extensive Goldfield; and append a rough sketch plan of the locality.

NOTES ON LEONTOPODIUM CATIPES.

By Baron von Mueller, K.C.M.G., M.D., F.R.S.

[*Read* 15*th Nov.*, 1881.]

In instituting recently a census of the genera of the whole Australian vegetation, I had to give to the remarkable alpine plant, first described by De Candolle as Gnaphalium catipes, a generic place also, its position thus far having never yet been firmly settled. Examining the plant first from localities in the Victorian Alps, I placed it in Antennaria, and described it as A. nubigena already in 1854 (Transact. Phil. Soc. of Victoria, i., 45), alluding already to the likelihood of its identity with Gunn's plant, sent by Lindley to the elder De Candolle; but I had no Tasmanian specimens at that time to establish its sameness with the one of the Australian Alps. In assigning to it a position among the species of Antennaria, I was careful to point out at once that it did not altogether accord with the characteristics of the legitimate congeners, our plant not being strictly diœcious. Indeed I was then already considering whether it ought not to find its most appropriate place in Leontopodium, notwithstanding the generally solitary capitula, and the biformity of the flower heads. To overcome the difficulty which presented itself, I framed a subgenus "Actina" for the reception of Antennaria nubigena, with the following characteristics :—"Scales of involucre radiating. Heads of the fertile plants, with several rows of female flowers in circumference, and with hermaphrodite ones in the centre. Heads of the sterile plants with only hermaphrodite flowers, a few rarely fertile, pappus at the extremity clavellate, with the exception of that of the female flowers, which is not thickened."

This subgeneric notation implied that the plant showed an approach to diœcism, thus paving the way from Antennaria to Leontopodium. A few years later Sir Joseph Hooker transferred this plant to his genus Raoulia (Fl. Tasm. i., 206, t. lviii.), and in this he is followed by Bentham (Fl. Austr. iii., 651), both, it seems, having only occasion to examine that state of the plant in which the bisexual but often sterile flowers prevail, whereas De Candolle had before him only the other state of the plant, with chiefly female flowers in the capitulum, the latter being figured in my "Plants of the colony of Victoria" (Plate xlv., fig. 4., the other at fig. 3), the pappus of both showing also considerable dissimilarity. Although we now know that the prevalence of the female or of the bisexual flowers is one of degree only, still there is a distinct dimorphism, and this same disparity seems to occur also in the genus Leontopodium, so much so, that in 1876 Mr. C. B. Clarke, when describing Leontopodium alpinum from the Indian Alps (Compositæ Indicæ, p. 100), notes not only heterogamous, but also distinct male and female capitula in the same glomerule. The accuracy of this observation I was able to confirm on Sikkim and Tibet specimens from Hooker and Thomson, and some Siberian samples from Turczaninow; moreover Sir Joseph Hooker also records last year in the generic character of Leontopodium "heads uni- and bi-sexual" (Flora of British India, part viii., p. 278). Hence there can be no doubt that Antennaria leontopodina (D.C. Prodr. vi., 269), obtained by Royle from Western India, though omitted by Hooker, and also by Clarke, is a diœcious state of Leontopodium alpinum. The opinion of Weddell (Chloris Andina i., 150), foreshadowed by myself, that Leontopodium should merge into Antennaria, though not countenanced by Bentham (B. & J. H. Gen. pl. ii., 303), deserves every consideration; but as additional species, likely yet to be discovered, and the re-examination of others, as yet only known in one of the states of dimorphism, may affirm hereafter the separation by R. Brown of Leontopodium from Antennaria, I deem it best to bring now the Gnaphalium or Raoulia Catipes to Leontopodium, by which means an interesting connection of an alpine plant of Tasmania and South-eastern Australia with the famous "Edelweiss" of Europe and Asia is established; moreover I am convinced that some

Raoulias of New Zealand will have to be transferred likewise to Leontopodium, notably the somewhat dimorphic R. glabra. Sir J. Hooker also alluding already (Handbook of the New Zealand Flora, i., 151) to the affinity of allied plants, placed by him into Gnaphalium, to Leontopodium. If it is desirable to maintain the multiplication of the genera of this group of Composites, then Anaphalis will claim also attention as regards the generic position of Leontopodium Catipes, especially as the involucre scales are radiating, though the general habit as well as the setæ of the pappus, free at the base, form but notes of trifling generic value. Finally it may be observed that Antennaria might become an apt point of generic concentration of the several allied plants with strictly universal capitula, while Leontopodium might receive those cognate genera in which the diœcism is only imperfectly expressed.

I avail myself of this opportunity, while speaking of Tasmanian Composites, simultaneously to point out that Leptorhynchus nitidulus has this year been refound there, it not having been gathered by anyone since R. Brown visited the island in the beginning of this century. The new locality is Glenorchy, where it was obtained by Mr. Aug. Simson, and where probably other Gippsland plants may be found yet. Bentham thought to recognise in it the L. linearis of Lessing, which Steetz however rightly kept apart (Lehm. pl. Preiss. i., 450), although my anticipation proved correct, that L. linearis constitutes merely a variety of the common L. squamatus. I recognised rightly L. nitidulus as the genuine Candollean plant already in 1854 (second general report, p. 12). Furthermore, I like here to mention that Helichrysum Gravesii, according to the late lamented Rev. W. W. Spicer, is indigenous to Clarke's Island and Kent's Group.

REMARKS ON THE VEGETATION OF KING'S ISLAND,

By Baron Ferd. von Mueller, K.C.M.G.,M.D.,Ph.D.,F.R.S.

King's Island, situated about halfway between one of the most southern prominences of the Australian continent and the most north-western point of Tasmania, has remained, in reference to its vegetation, almost unknown; for although this island was discovered, and its shores were mapped fully 80 years ago, very few plants were ever collected there. Anxious to push on the phytologic investigation of Australia anywhere, I recently induced Mr. Edw. Spong, who held the position of Lighthouse-keeper at Cape Wickham, to form a collection of such plants as might be within his reach; and this endeavour to obtain a scientific insight into the vegetation there received every encouragement from A. E. Douglas, Esq., of the postal department of Hobart, so that now phytographic comparisons to some extent can be instituted between the island under consideration and the nearest regions of Tasmania and Victoria.

From a few plants of rarity previously obtained, such as Phyllocladus rhomboidalis, which does not extend to Victoria, and such as Elæocarpus cyaneus and Zoysia pungens, which are not known from Tasmania proper, it remained hitherto unascertained, to which of both phytographic regions the flora of the interjacent island more particularly belonged. The collections creditably formed last season by the young sons of Mr. Spong, are not sufficient to solve this question fully, inasmuch as many more species are likely to be found in localities of the island not readily accessible up to this time. Only two plants, absolutely new to the Tasmanian dominion, were discovered by Messrs. Spong, namely Podotheca angustifolia, and Dictyurus quercifolius; but, as in the instance of Nablonium calyceroides, the Podotheca may also yet be discovered in some of the north-western regions of Tasmania, which are hitherto still largely or even entirely devoid of settlements. While surveys are now proceeding in that direction, some botanic collections might also be formed with but little inconvenience, and certainly with no additional expenditure whatsoever. All such material from new regions tends to elucidate the physical features of any country, and aids in estimating its capabilities.

Although the collections, now got from King's Island, contain mainly plants of wide distribution as well in Tasmania as also in Victoria, it was deemed best to place all the collected species on record, and thus to give the first instalment of a floral enumeration pertaining to the island. The immigrated plants, already of not inconsiderable number, are omitted.

Clematis microphylla, Lepidium ruderale, L. foliosum, Cakile maritima, Papaver aculeatum, Boronia polygalifolia (var. pinnatifolia), Correa speciosa, Comesperma volubile, Dodonæa viscosa, Bursaria spinosa, Viola hederacea, Drosera peltata, Elæocarpus cyaneus, Geranium dissectum, Pelargonium australe, Urtica incisa, Beyera viscosa, Phyllanthus Gunnii, Sagina apetala, Muehlenbeckia apressa, Atriplex crystallinum, A. cinereum, Rhagodia Billardierii, Salicornia australis, Mesembrianthemum australe, M. æquilaterale, Tetragonia implexicoma, Stackhousia linarifolia, Tillæa verticillata, Acæna sanguisorbæ, Acacia longifolia (var. Sophoræ), Dillwynia ericifolia, Swainsona lessertifolia, Calycothrix tetragona, Eucalyptus globulus, Leptospermum lævigatum, L. juniperinum, Melaleuca squarrosa, M. ericifolia, Pomaderris apetala, Epilobium tetragonum, Pimelea ligustrina, P. serpyllifolia, Banksia marginata, Daucus brachiatus, Apium prostratum, Sambucus Gaudichaudiana, Lagenophora Billardierii, Aster glutescens, A. stellulatus, A. lepidophyllus, A. axillaris, A. ramulosus, Nablonium calyceroides, Cotula filifolia, C. coronopifolia, Gnaphalium luteo-album, G. Japonicum, Helichrysum cinereum, H. apiculatum, Cassinia aculeata, C. spectablis, Calocephalus Brownii, Podotheca angustifolia, Erechtites quadridentata, Senecio spatulatus, S. lautus, S. odoratus, Wahlenbergia gracilis, Selliera radicans, Solanum aviculare (with its var. pygmala, flowering at a height of three inches), Myoporum insulare, Mentha gracilis, Ajuga australis, Alyxia buxifolia, Plantago varia, Styphelia Richei, S. ericoides, Sprengelia incarnata, Caladenia latifolia, Dianella longifolia, Potamogeton natans (var.), Cymodocea antarctica, Juncus communis, Restio tetraphyllus, Lepidosperma gladiatum, Scirpus nodosus, Sc. riparius, Carex pumila, C. paniculata, Danthonia penicillata, Poa cæspitosa, Distichlis maratima, Agrostis Solandri, Stipa flavescens, Dichelachne crinita, Pteris aquilina, Polypodium pustulatum, Fumaria hygrometrica, Cladonia reptipora, Ballia Brunonis, Cystophara platylobium, Melanthalia Billardierii, Dictyurus quercifolius, Phacelocarpus Billardierii.

I am not aware whether fern trees exist in King's Island; if so, then likely out of the ferns and their close allies—known to the number of fully 60 from Tasmania—many would accompany the arborescent kind, together with the so-called Pepper Tree, Sassafras, Musk Tree, Huon Pine, and a host of other plants, occurring only in springy and shady glades. It seems not even known yet whether any Casuarinas, the Wattle and Blackwood Acacias, the Oyster Bay Pine, and Xanthorrhœas extend to the island, nor have we learnt how many species of Eucalyptus occur there. The Mistletoes, advancing to the extreme South of Australia, may perhaps exist in King's Island. Of about 50 Tasmanian kinds of grasses, 60 of sedge-like plants, and 70 of orchids, many would likely be found in an insular area of half a hundred miles in length, containing doubtless great diversity of soil; further searches should therefore be instituted in various localities and throughout all seasons, especially during the spring, and the records on the Tasmanian flora would thus far also become gradually completed in reference to the outlying islands.

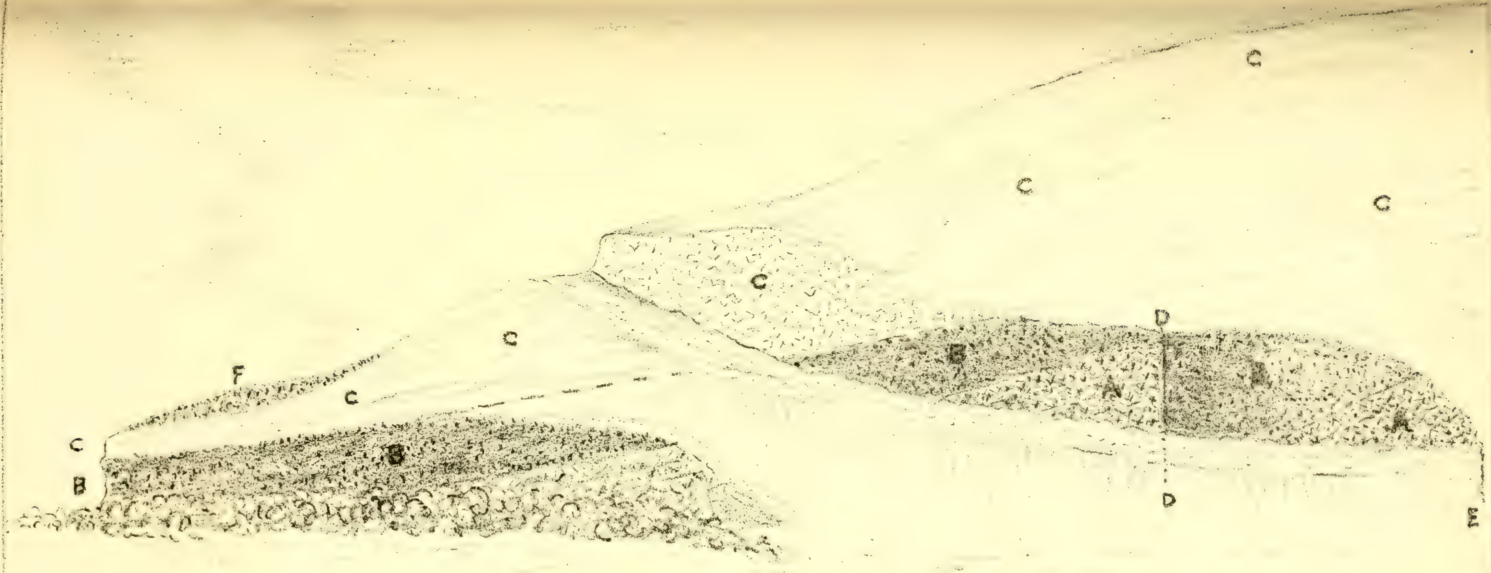
DESCRIPTION OF A SPECIES OF SEA BREAM (*GIRELLA TRICUSPIDATA*), FROM SOUTHPORT, TASMANIA.

By R. M. Johnston, F.L.S.

[*Read* 15*th Nov.*, 1881.)

D $\frac{15}{13}$, A $\frac{3}{12}$, L. lat. 54-56, L. tr. $\frac{11}{23}$. The length of head is one fifth of the total length. Dorsal fin of moderate height, the spinous portion lower than the soft. The incisors three-pointed, moderately broad, imbricate, in several series in the upper and lower jaws. Colour uniform blackish-brown, with lighter tinge of olive towards belly and lower portion of head.

Total length	15$\frac{6}{8}$	inches.
Body	13$\frac{1}{4}$	,,
Greatest depth	5$\frac{1}{2}$	,,
Depth of caudal peduncle ...	1$\frac{7}{8}$	,,



A. Stratified arenaceous beds with included angular fossiliferous blocks of mudstone

B. Finely laminated clays and sands full of leaf and fruit impressions.

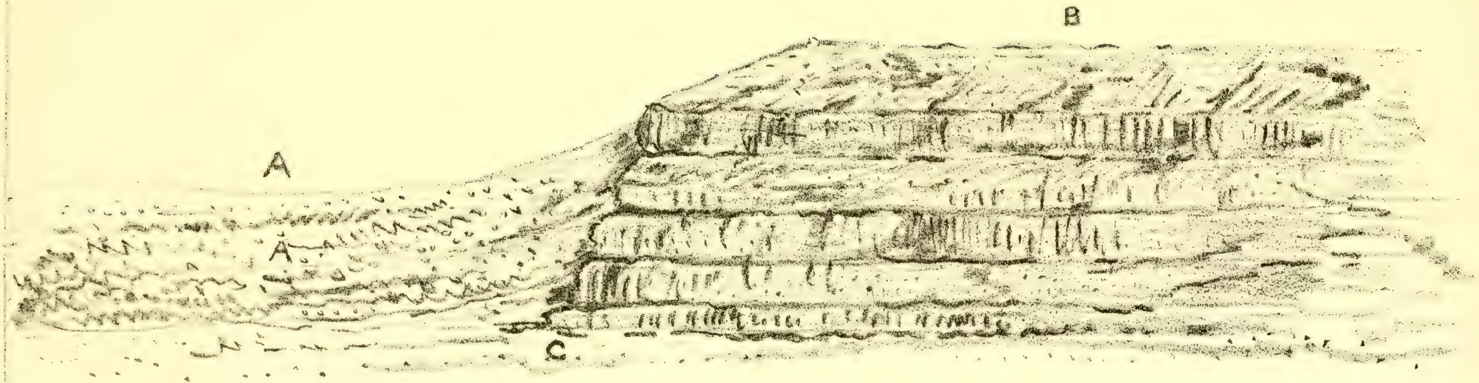
C. Feldspathic basalt - from the cooling joints of which fossil bones were obtained.

D Fault throwing up the beds. A.

E Northerly limit of exposed face.

F. Humus - with artificial accumulation of burnt comminuted shells of existing species associated with charred embers of wood

FIG. 1 SECTION AT ONETREEPOINT.

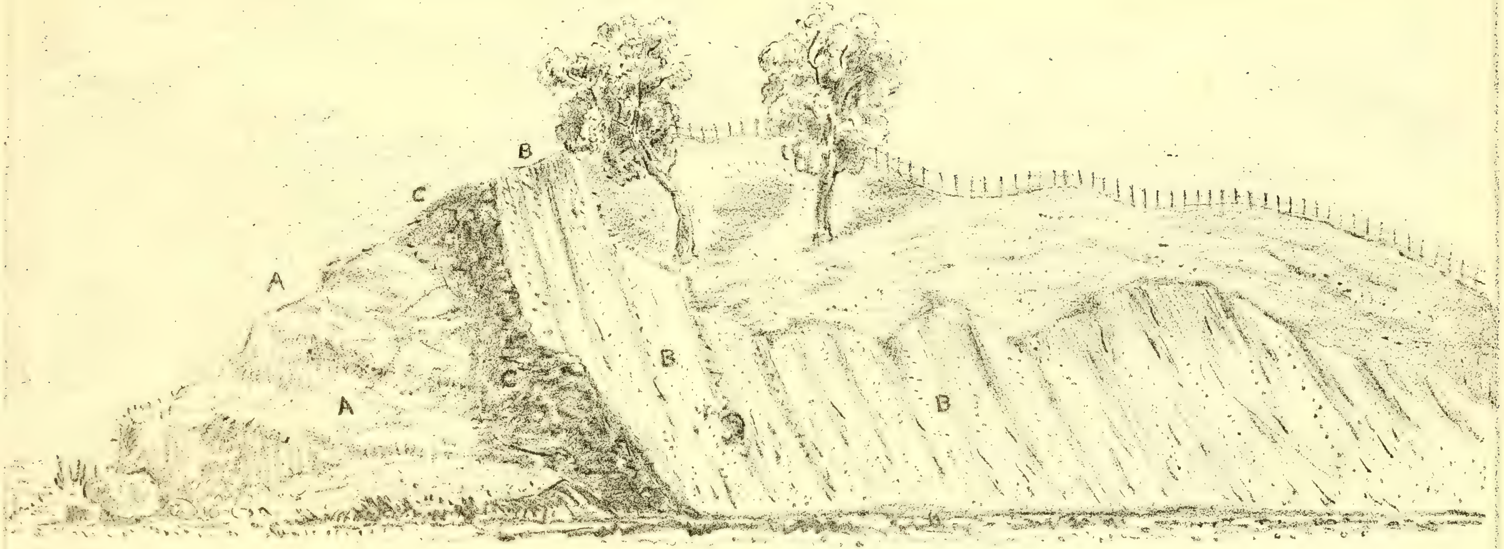


A. Upper members of Tertiary lacustrine formation

B. Palaeozoic Marine beds. Mudstone Series.

FIG 2 SECTION OPPOSITE SANDY BAY POINT.

BROWN'S RIVER ROAD.

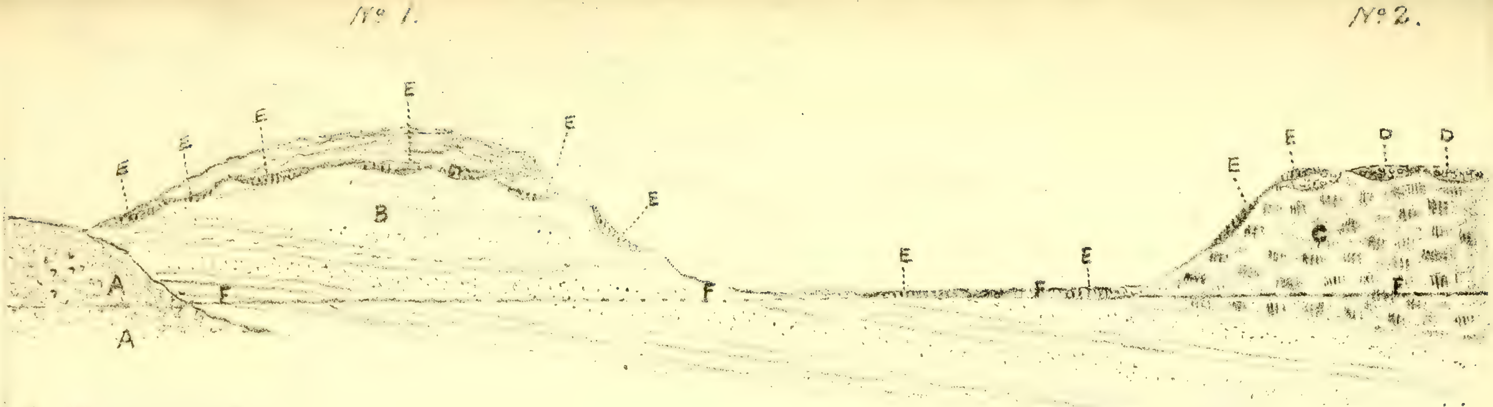


A Thick bedded sandstone of doubtful age.

B. Finely laminated clays blue and reddish, more or less arenaceous, full of leaf and fruit impressions.

C. Fault

FIG. 3. SECTION NEARLY OPPOSITE NEW RIFLE RANGE. SANDY BAY.



A Devonian diabase.

B. White laminated pipe clays with numerous fossil leaf impressions

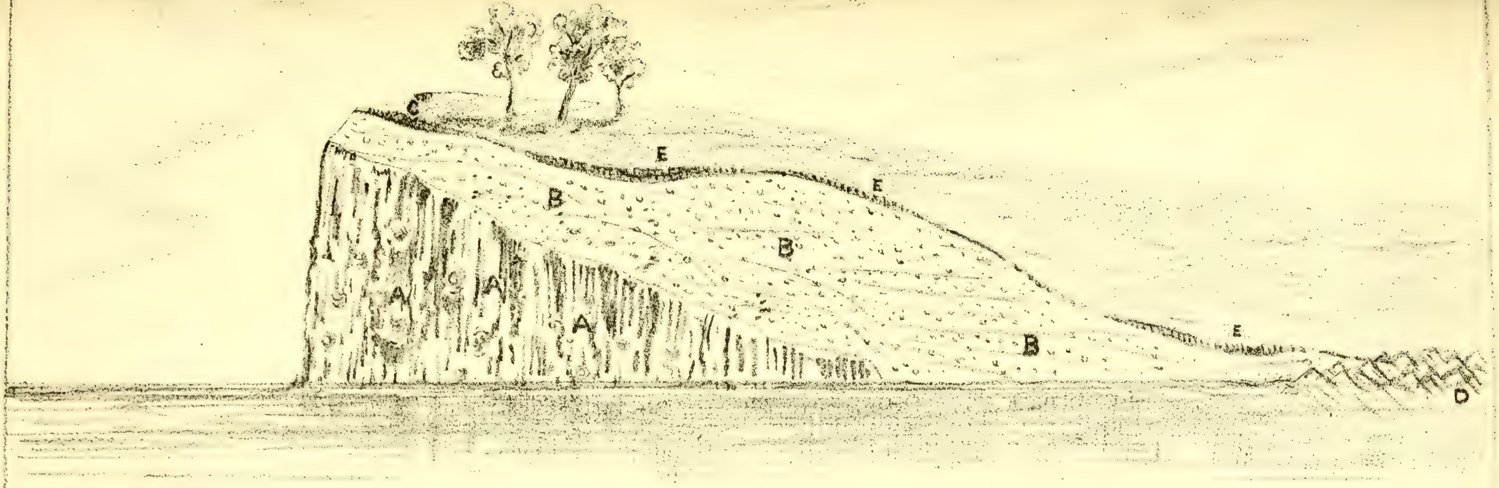
C. Feldspathic basalt similar to that at Lindisfarne, Beauty Bay, Prince of Wales Bay, One Tree Point, Tellston and elsewhere. Probably overlying B as shown.

D. Waterworn pebbly drifts - full of fossil woods, agates cornelians, and jaspers.

E. Superficial deposits composed of the burnt comminuted remains of existing shells probably native Kitchen Middens".

F. Sea level.

FIG 4. No 1 PIPECLAY BLUFF.
No 2. CORNELIAN BAY CEMETRY BLUFF.



A	Decomposed feldspathic basalt (vesicular)
B.	Pebbly drift beds
C	Recent Shell mounds
D.	Mudstone series (Palaeozoic)
E	Shell deposits.

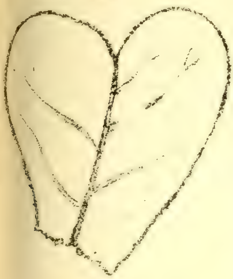
FIG. 5. LINDISFARNE BAY.

EXPLANATION OF FIGURES.

Figs.	1 TO 68.
1-33, 35.	Leaf impressions common to deposits at Geilston, Pipeclay Bluff, Cornelian Bay, Sandy Bay, and One Tree Point, principally taken, however, from One Tree Point and Pipeclay Bluff, Cornelian Bay.
34.	Fruit impression finely, transversely, striated, from Pipeclay Bluff, Sandy Bay.
36.	Impressions of curious jointed stem, frequently mistaken for the fossil impression of some form of Pupa; abundant Geilston Travertin.
37.	Fossil impression of the imbricated foliage of Aracauria Johnstonii, F.v.M. A portion of the cone of do., 6. Portion of the same magnified.
38-39.	Two views of a lignified fruit from the Deep Lead at Beaconsfield.
40-41.	A species of Penteune (calcareous), probably *P. Allporti*, F.v.M., *n.s.*, for Geilston Travertin. Fig. 41 has been shown with six valves, by mistake, should be five nearly equal divisions.
42-43.	A fossil fruit with four valves, allied to the genus Penteune, and found associated with 40 and 41.
44-47.	Valves separated belonging to figs. 40-41.
48-49.	Do., do., do., to figs. 42-43.
50.	Fossil cast of *Plesiocapparis leptocelyphis.* Geilston and Pipeclay Bluff.
51-52.	Fossil cast (calcareous) *Platycoila Sullivani*, F.v.M. Geilston.
56-a.b.c.	Do., do. (lignite). Deep Lead, Beaconsfield.
53.	Fossil cast of a fruit (calcareous) common in Travertin, Geilston.
54-55.	Do., do., do., also common, do., do.
57.	Fossil fruit (lignite) with curiously wrinkled surface, compressed, from Deep Lead, Beaconsfield.
58.	Fossil cast (arenaceous) of fruit Stephenson's Bend, Launceston, and One Tree Point, Hobart.
59-*a.b.*	*Concotheca turgida*, F.v.M., lignite. Beaconfield.
60-*a.*	*Rhytidotheca Johnstonii*, F.v.M., *n.s.*, lignite. Deep Lead, Beaconsfield.
61-62, *a.b.*	Compressed soft ligneous fruit, two sections from the lignites of Deep Lead, Beaconsfield.
63-*a.b.*	Fossil incisor of an animal probably allied to the existing Halmaturus from the *bone breccia.* One Tree Point.
64-a.b.c., *aa.*, *bb.*, *cc.*	Three sections actual magnified size of a tooth of a species of *Hypsipsyminus*, from the same point as 63.
65. *a.b.c.d.*	Various sections of a leg bone of a marsupial, associated with 64. Nat. size.
66-a.b.c.	Various bones. Nat. size.
67-a.b.c.	
68-a.b.	Do., do.

NOTE.—The various figures and sketches were kindly copied from the original drawings, and drawn upon lithographic transfer paper by my friend, Mr. Arthur Lovett.

R. M. J.



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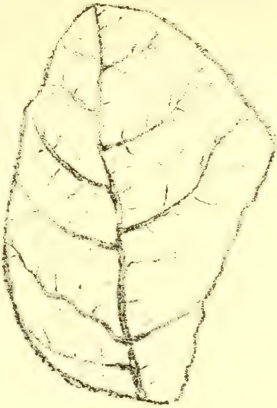

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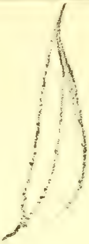

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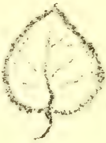

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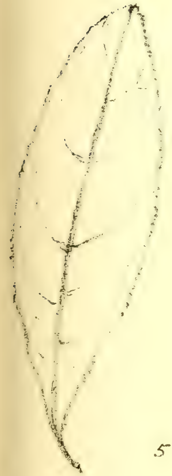

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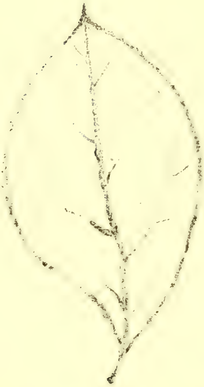

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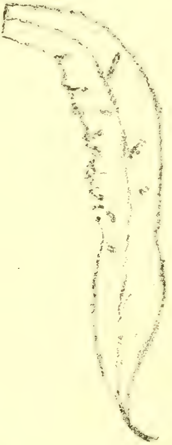

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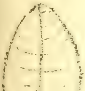

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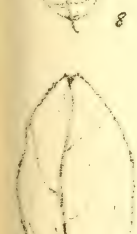

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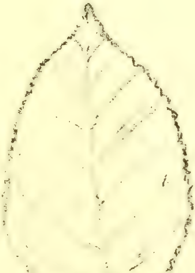

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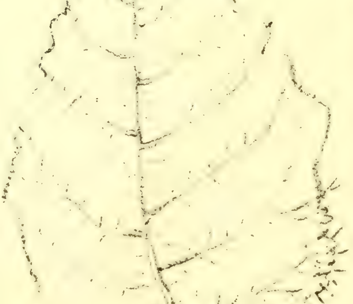

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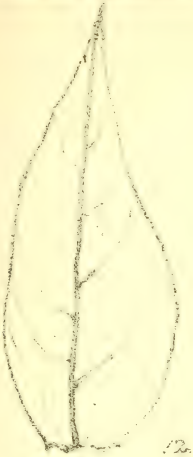

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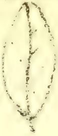

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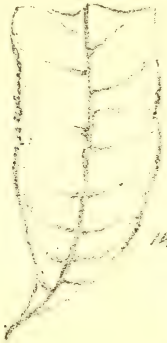

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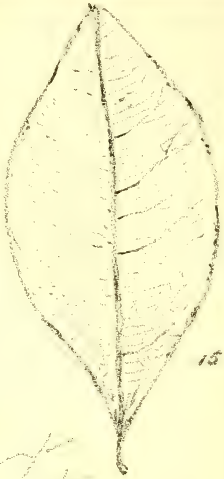

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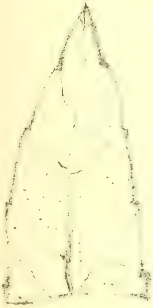

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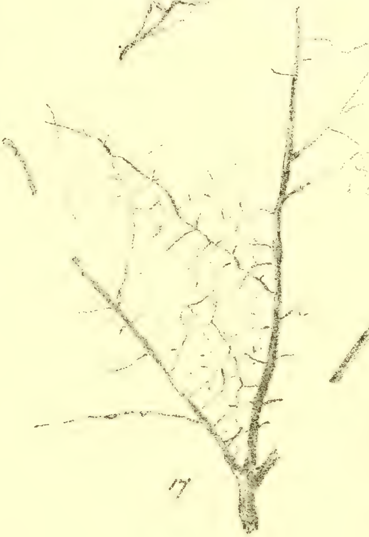

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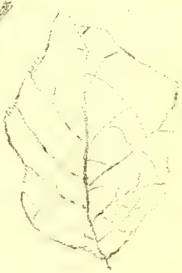

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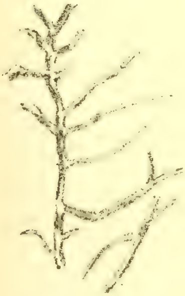

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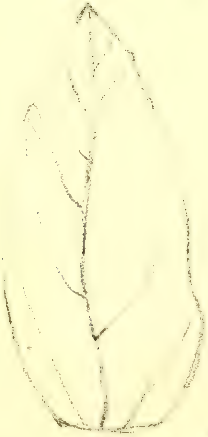

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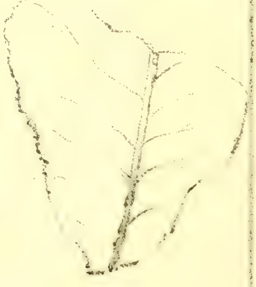

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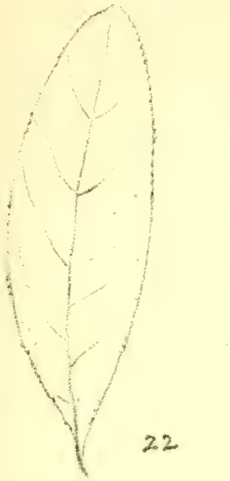

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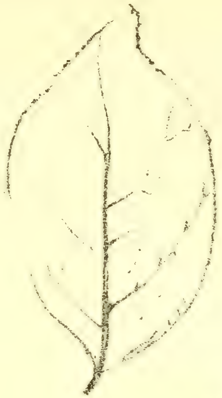

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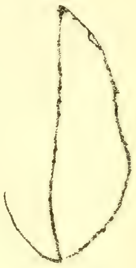

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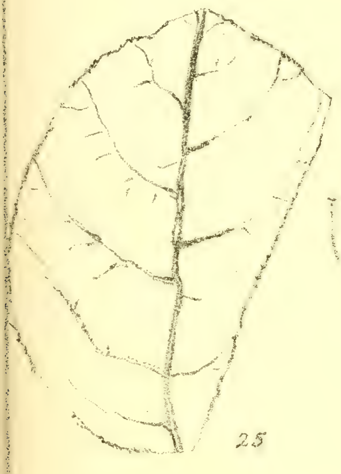

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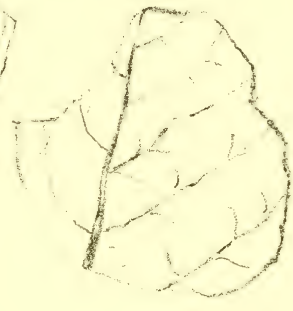

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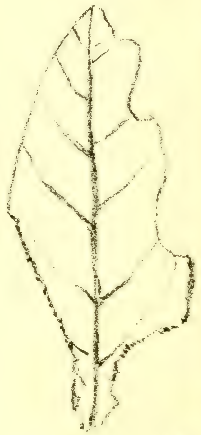

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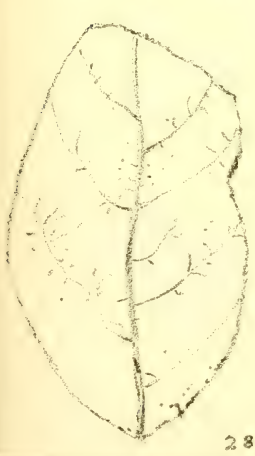

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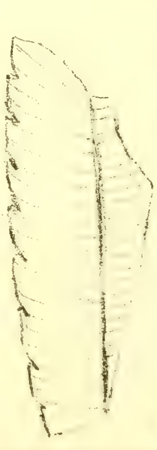

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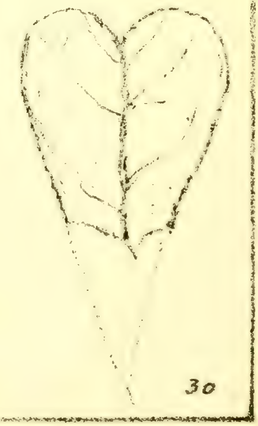

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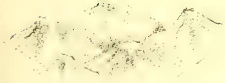
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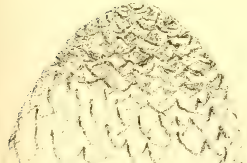
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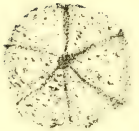
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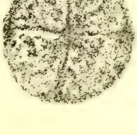
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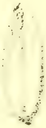
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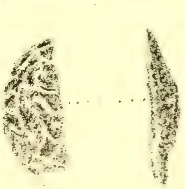
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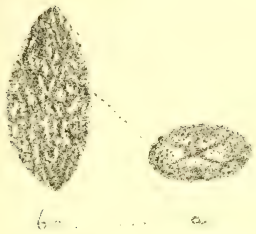

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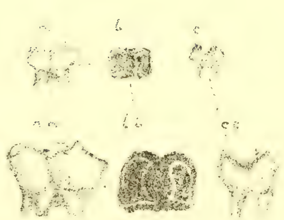

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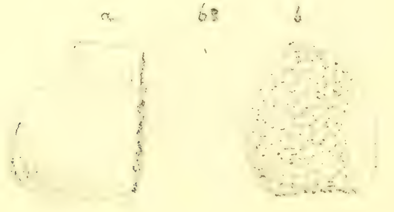

MONTHLY MEANS OF OBSERVATIONS TAKEN AT NEW NORFOLK, TASMANIA, 1881.

Latitude 42° 46′ 48″ South. Longitude 147° 4′ 45″ East.

Months.	Barometer.	Thermometer.					Humidity of Air.			Condensation.		Evaporation.	Ozone	Clouds.	Winds.	
	At sea level Temperature 32°.	Mean Temperature of two Daily Registers	Mean Temperature of max. & min. in shade	Mean Diurnal Range	Mean Solar Intensity.	Mean Terrestrial Radiation.	Dew Point, Mean position.	Humidity of Air per 100.	Elastic Force of Vapor per 1000.	Rain in Inches.	No. of Days on which Rain fell.	Spontaneous Evaporation in Inches.	Mean Daily Amount, 2 registers.	Mean Daily Amount, 2 registers.	Prevailing Direction.	Force in lbs. per sq. inch.
		°	°	°	°	°	°									
January.. ...	29·960	63·48	64·25	26·16	136·06	43·06	50·05	·62	·360	·69	8	6·52	5·66	5·59	SE.NW	
February	30·051	61·61	62·64	27·96	134·53	40·00	49·63	·66	·356	·44	4	6·28	5·19	5·46	SE.NW.W	
March	30·041	60·27	61·35	21·93	123·64	42·63	50·40	·70	·366	1·85	10	4·01	6·48	6·90	NW.SE	
April	30·131	52·02	53·65	20·80	116·06	35 00	45·88	·80	·307	1·33	10	2·04	6·10	6·03	NW.SE.W	
May	30·186	48·04	49·06	17·33	105·40	31·93	43·78	·86	·283	3 20	17	1·82	6·33	6·76	NW	
June	29·946	41·34	43·05	15·03	90·50	29·16	38·40	·90	·231	1·57	9	·82	6·81	6·25	W	
July	30·088	44·06	44·75	19·30	106·46	27·33	42·58	·94	·268	1·25	14	1·14	6·81	5·74	W.SW	
August	30·030	45·83	47·70	19·09	111·51	30·77	39·49	·79	·243	1·75	14	2·38	6·93	6·95	NW.W.SW	
September....	29·932	48·00	49·34	23·96	120·27	29·86	39·61	·73	·243	1·41	14	3 08	6·59	5·68	NW.SW	
October	30·049	54·33	54·32	24·48	121·03	35·00	44·46	·69	·292	1·36	11	4·02	6·24	6·22	NW.SE.W	
November....	29·879	60·20	59·93	23·10	129·43	41·00	48·97	·66	·346	2·98	13	4·95	6·55	6·01	SE.SW	
December	29·793	60·91	60·87	24·25	132·03	40·67	46·91	·62	·323	1·57	12	5·28	6·19	5·80	NW.SE	
Sums	360·086	640·09	650·91	263·39	1426·92	426·41	540·16	8·97	3·618	19·40	136	42·34	75·88	73·39	NW.W.SE	
Mean for 1881.	30·007	53·34	54·24	21·94	118·91	35·53	45·01	·74	·301	1·61	11·33	3 52	6·32	6·11		
Mean for 1880.	29·962	53·37	54·26	21·10	118·56	37·36	44·95	·74	·305	1·93	12	3·65	5·19	5·92	W.NW.SE	
Mean for 1879.	30·013	53·14	53·06	22·24	120·12	35·37	44·64	·75	·294	1·58	11·25	2·79	5·93	5·55	NW.W	
Mean for 1878.	29·927	52·87	53·64	20·93	116·88	36·48	44·52	·74	·282	2·32	12·50	4·01	7·26	5·90	W.SE	
Mean for 1877.	30·005	52·71	52·98	22·03	118·35	36·02	44·37	·75	·297	1·88	11·66	4·28	7·91	5·71	W.SE	
Mean for 1876.	29·887	52·92	54·18	21·61	116·37	37·12	45·22	·76	·308	1·96	11·41	4·10	6·81	5·49	W	
Mean for 1875.	29·863	54·62	53·65	21·33	116·84	37·69	45·99	·75	·320	2·34	14·41	4·03	7·31	5·56	W.SE	

Total Rainfall for 1880, 28·19in.; for 1879, 19·01in.; for 1878, 27·83in.; for 1877, 22·63in.; for 1876, 23·54in.; for 1875, 28·17in.; for 1874, 23·04in.

W. E. SHOOBRIDGE.

REPORT

OF THE

ROYAL SOCIETY

OF

TASMANIA

FOR THE YEAR

1881.

32 19'

Tasmania:
WILLIAM THOMAS STRUTT, GOVERNMENT PRINTER, HOBART.

1882.

ROYAL SOCIETY OF TASMANIA.

Patron:

HER MAJESTY THE QUEEN.

President:

HIS EXCELLENCY MAJOR SIR GEORGE CUMINE STRAHAN,
R.A., K.C.M.G.

Vice-Presidents:

HON. J. W. AGNEW, M.D., M.L.C.
JAMES BARNARD, ESQ.
HIS HONOR MR. JUSTICE DOBSON.
THOMAS STEPHENS, ESQ., M.A., F.G.S.

Council:

*THE RIGHT REV. BISHOP BROMBY, D.D.
*JOHN SWAN, ESQ.
*JUSTIN M'C. BROWNE, ESQ.
*A. G. WEBSTER, ESQ.
C. T. BELSTEAD, ESQ.
T. STEPHENS, ESQ., M.A., F.G.S.
H. J. BUCKLAND, ESQ.
J. BARNARD, ESQ.
HIS HONOR MR. JUSTICE DOBSON.
C. H. GRANT, ESQ.
RUSSELL YOUNG, ESQ.
HON. J. W. AGNEW, M.D.

Treasurer:

C. J. BARCLAY, ESQ.

Hon. Secretary:

JAMES BARNARD, ESQ.

Auditors of Annual Accounts:

F. BUTLER, ESQ.
JOHN MACFARLANE, ESQ.

Auditors of Monthly Accounts:

H. J. BUCKLAND, ESQ.
C. T. BELSTEAD, ESQ.

Curator of Museum:

MR. T. ROBLIN.

Superintendent of Gardens:

MR. F. ABBOTT, JUN.

* Members who retire next in rotation.

Honorary Member:

Mrs. Meredith, Launceston.

Corresponding Members:

* Members who have contributed Papers which have been published in the Society's Transactions.

W. H. Archer, Esq., Sydney, New South Wales.
Sir Joseph Dalton Hooker, C.B., K.C.S.I., &c., &c., London.
*Baron F. Von Müeller K.C.M.G., M.D., F.R.S., F.L.S., &c., Government Botanist, Melbourne, Victoria.
C. Tomlinson, Esq., F.R.S., F.C.S., &c., Highgate, near London.
*G. Bennett, Esq., M.D., F.Z.S., Sydney, New South Wales.
Professor G. Neumayer, Munich.
*Rev. J. E. Tenison-Woods, F.L.S., F.G.S., F.R.G.S.
Dr. W. O. Sonder, Foreign Hon. Sec. Society of Naturalists, Hamburg.
Rev. J. J. Bleasdale, D.D., F.G.S.
*Captain W. V. Legge, R.A., F.Z.S., M.R.A.S., England.
Professor John Agardh, M.D., University of Lund, Sweden.
Dr. Julius Haast, F.R.S., Director of Museum, Christchurch, New Zealand.
Archibald Liversidge, Esq., F.G.S., Professor of Geology and Mineralogy in the Sydney University.
Professor W. Harkness, U.S.N., United States Naval Observatory, Washington.
Henry Haylin Hayter, Esq., Government Statist, Melbourne.
*Frederick M. Bailey, Esq., Brisbane, Queensland.
*Ralph Tate, Esq., Assoc. Lin. Soc , F.G.S., Professor of Natural History, University of Adelaide.
*John Brazier, Esq., C.M.Z.S., Sydney.
*Richard Schomburg, Ph.D., C.M.Z.S., Director of Botanic Gardens, Adelaide.
Professor G. F. H. Ulrich, F.G.S., Melbourne.
Alexander Wallace, Esq., Secretary Board of Agriculture, Victoria.
*F. W. Hutton, Esq., F.G.S., C.M.Z.S., Professor of Biology, Canterbury College, Christchurch, New Zealand.
Rev. George Brown, C.M.Z.S., Sydney.
Professor F. M'Coy, F.G.S., University, Melbourne.
R. J. L. Ellery, Esq., F.R.S., F.R.A.S., Government Astronomer, Melbourne.

Mons. J. N. Verschaffelt, Ghent, Belgium.
Robert Etheridge, jun., F.G.S., British Museum.
James Hector, M.D., C.M.G., F.R.S., F.G.S., Director Geological Survey of New Zealand, Wellington.
Rev. Charles Rogers, LL.D., Secretary Royal Historical Society, London.
E. P. Ramsay, F.L.S., Curator of Australian Museum, Sydney.
Hon. W. M'Leay, F.L.S., Sydney.
William Tompson Bednall, Adelaide, South Australia.

List of Fellows and Members.

• Fellows who have contributed Papers which have been published in the Society's Transactions. † Denotes Life Membership.

*Abbott, Francis, F.R.S., F.R.M.S., Hobart.
*Abbott, F., jun., ditto.
Adams, G. P., ditto.
*Agnew, Hon. J. W., M.D., M.L.C., Fellow of the Linnean Society of New South Wales, ditto.
Aikenhead, Hon. J., M.L.C., Launceston.
Adams, R. P., Solicitor-General, Hobart.
Aubin, Mrs. F., ditto.
Allport, Morton John Cecil, ditto.
Atkins, Charles J., ditto.

Bilton, H., Glenorchy.
*Barnard, James, Hobart.
Butler, Francis, ditto.
*Bromby, Right Rev. C. H., D.D., Lord Bishop of Tasmania, Hobart.
Bright, R.S., M.R.C.S., Eng., ditto.
Butler, Henry, F.R.C.S., Eng., ditto
Buckland, H. J., ditto.
Browne, Justin M'C., ditto.
Barclay, C. J., ditto.
Bedford, W., Anstey Barton.
Belstead, C. T., Hobart.
Belbin, W., M.H.A., ditto.
Benjafield, H., M.B., ditto.
Brown, Hon. N. J., M.H.A., Meadow Banks, Glenora.
Bidencope, J., Hobart.
Butler, E. H., ditto.
Bailey, Rev. J. H. Brooke, ditto.
Barnard, C. E., M.D., New South Wales.
Brock, H. J., Campania.
Beddome, C. E., Hillgrove, Brown's River Road.
Burgess, W. H., Hobart.
Bethune, John C., Dunrobin.
Barnes, William, Trevallyn, Launceston.

Chapman, Hon. T. D., M.L.C., New Town.
Cook, Henry, Hobart.
Clark, J. M., ditto.
Creswell, C. F., ditto.
*Cotton, Francis, Swanport.
Crawford, Lieut.-Colonel, Hamilton-on-Forth.

Clarke, J. K., New South Wales.
Cruttenden, Thomas, Woodsden, Buckland.
Coote, Audley, Sandy Bay.
Cowle, Miss, Hobart.
Crowther, A. B., M.R.C.S., Eng., ditto.
Crosby, R., ditto.
Crowther, E. L., M.D., ditto.
Crouch, E. J., M.R.C.S., Eng., ditto.
Crosby, William, jun., ditto.

*Dobson, His Honor Mr. Justice, ditto.
Dobson, H., ditto.
Dowdell, C., ditto.
Davies, R. L., ditto.
Dodds, the Hon. J. S., M.H.A., ditto.
Dobson, Hon. Alfred, M.H.A., ditto.

Elliston, C. H., ditto.
Evans, T. M., ditto.

Fysh, Hon. P. O., ditto.
Freeman, E. J., ditto

†Gellibrand, Hon. W. A. B., M.L.C., Hon. Member Leeds Institute, River Ouse.
Grant, C. H., Hobart.
Gray, Rev. John, Glenorchy.
Grahame, W. H., Hobart.
Giblin, Edward O., M.D., ditto.
Grant, James, ditto.
Gawne, E. B., Bellerive.

*Hall, E. Swarbreck, M.R.C.S., Eng., Hobart.
Harris, Rev. R. D. P., ditto.
Hunter, Henry, ditto.
Huybers, A., ditto.
Howell, F. G., ditto.
Holden, L. A., M.R.C.S., Eng., ditto.
Hookey, Vernon W., ditto.
Henry, Robert, junr., ditto.
Hamilton, Jno., Hobart.
Hull, H. M., ditto.

*Johnston, R. M., ditto.

Kennerley, Hon. Alfred, ditto.

Kermode, W. A., Mona Vale.

Lewis, Hon. David, M.H.A., Hobart.
Lucas, R. J., ditto.
Latham, G. H., ditto.
Lovett, W., Colonial Auditor, ditto.

Maclanachan, Hon. James, Ballochmyle.
Macfarlane, James, Hobart.
Macfarlane, John, ditto.
Mather, J. B., ditto.
Maxwell, C. M., ditto.
*†Milligan, Joseph, F.L.S., England.
Marsh, H. J., ditto.
†Mace, G., Spring Bay.
Morris, W. V., Hobart.
Murphy, Most Rev. D., Bishop of Hobart.
Macmichael, John C., Hobart.
Maddox, Wm. Gordon, M.R.C.S., Eng., Launceston.
Mason, Wm., M.R.C.S., Eng., ditto.
Mace, F., Buckland.
Macfarlane, W. H., M.B., New Norfolk.

Napier, G. R., Hobart.
*Nowell, E. C., ditto.
Nairn, C. C., New Town.
Nicholas, Wm., Nant, Bothwell.
Nicholas, Geo. C., Mill Brook, Ouse.

Pillinger, J., Antill Ponds.
Perkins, H. A., M.D., M.R.C.S., Eng., Hobart.
Parsons, Cecil J., New Town.
Petterd, W. F., C.M.Z.S., Launceston.

Roberts, H. L., Hobart.
Read, R. Cartwright, Redlands, New Norfolk.
Riddoch, A., M.H.A., New Norfolk.
Roblin, T., Curator of Museum, Hobart.
Reynolds, W. J. J., ditto.
Richards, Rev. George B., President of Horton College, Ross.

Seal, M., Hobart.
Smith, His Honor Sir Francis, Chief Justice, ditto.
†Solomon, Joseph, Hobart.
*Stephens, T., M.A., F.G.S., Inspector of Schools, ditto.

Story, Dr. G. F., Swanport.
Salier, F. J., Hobart.
*Swan, John, ditto.
*Shoobridge, W. E., New Norfolk.
Shoobridge, E., ditto.
*Simson, A., Launceston.
Scott, Hopton, Hobart.
Swan, E. D., ditto.
Sharp, J., ditto.
Shoobridge, R. W. G., New Norfolk.
Smith, C. H., Launcesson.
Stone, T., Hobart.
Stanley, Captain, R.N., Hobart.
Shaw, Bernard, Launceston.
Simmons, Rev. J. Wilkes, Hobart.

*Travers, S. Smith, New Town.

Walch, James H. B., Hobart.
Weaver, W. G., ditto.
Whyte, Hon. James, ditto.
Wilson, George, Mount Seymour.
Wise, F. H., Hobart.
Webster, A. G., ditto.
Wright, Stephen P. H., Glenorchy.
Westbrook, G. C., Hobart.
Woodgate, E. W., Launceston.
Walker, James Backhouse, Hobart.
Wagenknecht, Albert, George's Bay.
Wintle, S. H., F.L.S., ditto.

Young, Russell, Hobart.

Obituary.

GOULD, JOHN, F.R.S., F.L.S., F.Z.S., the eminent Ornithologist.—For many years a Corresponding Member of the Society. Died in London, 3rd February.

WHITCOMB, GEORGE.—Elected a Fellow of the Society in 1851. Died 19th February.

GUNN, RONALD CAMPBELL, F.R.S., F.L.S.—One of the founders of the Society. Died at Launceston, 23rd March.

HALL, EDWARD SWARBRECK, M.R.C.S., Eng.—A Fellow of the Society since 1854. Died at Hobart, 30th July.

MINUTES of the Annual General Meeting of the ROYAL SOCIETY OF TASMANIA, *held at the Museum, Macquarie-street, at half-past Seven* P.M. *on Thursday, 26th January*, 1882; JUSTIN M'CARTY BROWNE, *Esq., in the Chair.*

THE advertisement by which the meeting had been convened having been read, the Chairman called upon the Secretary to read the Annual Report.

The Report for 1881 was then read.

Mr. C. H. Grant, in moving the adoption of the Report, and that it be printed and distributed among the Fellows, said that it was a very satisfactory statement, especially so far as it related to financial affairs. They had commenced the year with a debit balance, and had concluded with money to their credit, which, although not of a great amount, was yet very satisfactory, showing that their worthy Secretary had carefully managed the finances of the Society. The work during the past year, although showing no great results, still made evident the fact that the Society had laboured successfully. Visitors to the Gardens during the year had been much delighted with them; and many of those from the neighbouring Colonies, and even from England, had spoken highly of the grounds, and of the orderly state in which they were kept. In the Library there had been a steady increase to the number of its volumes. It also had received eulogy from visitors, being undoubtedly, as a scientific Library, one of the best in the Colonies. He hoped that in the future the work of the Society would progress as satisfactorily as it had done in the past.

Mr. R. Henry seconded the motion, which was then put and carried.

The Hon. Secretary, Mr. Barnard, reported that the retiring Members of Council were Mr. Justice Dobson, Dr. Agnew, Messrs. C. H. Grant and Russell Young; that these names had been posted in the Library, agreeably to Rule 32; and that no other nominations had been received.

It was resolved that the retiring Members of Council be re-elected.

Messrs. F. Butler and John Macfarlane were again elected Auditors of Annual Accounts.

Mr. Wm. Nicholas, Nant, Bothwell, and Mr. Geo. Clarence Nicholas, Millbrook, Ouse, were elected Fellows of the Society.

Dr. Perkins moved a vote of thanks to Mr. Barnard, their worthy Secretary. He was sure he had given a great deal of time to the work of the Society. He had been most indefatigable in endeavouring to follow closely the footsteps of Dr. Agnew, who had left the Society as a foster child in his hands.

Mr. Stephens seconded the motion. It was fortunate for the Society that it had a gentleman with some measure of spare time on his hands, and willing, as was not in all cases the rule, to devote that time to a Society such as theirs. He thought he expressed the sentiments of all when he said they were grateful to Mr. Barnard for his assistance to the Society in the capacity of Hon. Secretary.

The motion was then put, and carried unanimously.

Mr. Barnard, in acknowledging the vote, said that he was but too happy to aid the Society, and found the employment given to him most congenial. It had been fortunate that when last year he retired from the office which he had held for many years, he had found an opportunity to thus occupy his leisure time. It had been his desire, wish, and hope that the office of Hon. Secretary should suffer no discredit whilst in his hands. He had endeavoured to promote the objects of the Society in every way possible, and he thanked them for the support he had met with in his efforts. All would welcome the return of Dr. Agnew; and he hoped that when he came back he (Mr. Barnard) would be able to hand over the office of Secretary to him without it having suffered any detriment. He desired to acknowledge the assistance he had received from the co-operation of the Curator, Mr. Roblin, whose services were of a most valuable nature to the institution, and worthy of far higher pecuniary recognition than they received. The Society and public were much indebted to that gentleman; and he felt that he could not say too much regarding the services Mr. Roblin had rendered the Society. Although Curator of the Museum, his labours were not confined to that branch of the Society; and he (Mr. Barnard) hoped that some means would be devised for making the office a more remunerative one than at present.

A vote of thanks to the Chairman concluded the business.

REPORT.

The session of 1881 was opened on April 12, with an inaugural address by His Excellency Sir J. H. Lefroy, K.C.M.G., C.B., F.R.S., as President of the Society. This was followed by a paper read by Mr. R. M. Johnston, F.L.S., entitled "Notes showing that the estuary of the Derwent was occupied by a Freshwater Lake during the Tertiary period." The following papers were brought forward at the various subsequent meetings:—"Notes on two new Marine Shells *(Delphinula Johnstoni* and *Leda Lefroyi)*," dredged off Three Hut Point, D'Entrecasteaux Channel, by Lieut. C. E. Beddome, I.N.—"Suggestions for an extended elucidation of the Plants of Tasmania," by Baron F. Von Müeller, K.C.M.G , M.D., F.R.S.—"Notes on a species of Eucalyptus *(E. hœmastoma)*," not hitherto recorded in the Flora of Tasmania, by T. Stephens, Esq., M.A., F.G.S.—"On Auriferous Country and Gold-bearing Rocks," by Charles E. Barnard, M.D., F.L.S.—"On Type Species of Tasmanian Shells unrecorded in 'Census of Tasmanian Shells,'" by Professor R. Tate, Assoc. Linn. Soc. F.G.S.—"Notes on a species of *Zieria (Z. veronica)*," by Augustus Simson, F.L.S.—"On the Queen's Domain, Hobart, with suggestions for its improvement," by E. J. Crouch, M.R.C.S., Eng.—"Remarks on the Abstracts of the Meteorological Observations taken at the Lighthouses and other Coast Stations in Tasmania during the years 1871, 1872, 1873, 1874, and 1875," by E. C. Nowell, Government Statistician.—"On the question of establishing a 'Botanical Class-Ground' in the Society's Gardens," by T. Stephens, M.A., F.G.S.—"On the Magnetic Variation at Hobart, and its change in amount since last determined," by His Excellency Sir J. H. Lefroy, K.C.M.G., C.B., F.R.S., President of the Society.—"On the Scamander Gold Field," by S. H. Wintle, F.L.S.—"Notes on *Leontopodium catipes*," by Baron F. Von Müeller, K.C.M.G., M.D., F.R.S.

The Council have to record the loss sustained during the year by the death of Mr. Ronald Campbell Gunn, F.R.S., F.L.S., a distinguished botanist and man of science, and who had been associated with the earliest history of the Society; and also of Mr. John Gould, F.R.S., the eminent ornithologist, whose publications are of world-wide celebrity. One of the original Members of the Society, the late William Henty, deserves mention from his uniform support to the interests of horticulture and botany during his lengthened residence in Tasmania. The list would be incomplete without a reference to Dr. E S. Hall, whose labours in the cause of sanitary science in conjunction with meteorology and vital statistics were so well known and highly appreciated both at home and abroad. Seventeen new Members were elected into the Society during the year, and there was but one resignation.

Meteorological Returns have, as usual, been received from the various Lighthouses, through the Marine Board; and Mr. W. E. Shoobridge has furnished the results of his observations taken at New Norfolk during the past year. An Abstract for the five years ending in 1880, of the Lighthouse Tables, is in the press. No observations have, as yet, been resumed at Hobart, but steps are in progress to effect this desirable object early in 1882. In connection with this subject, the Council has to acknowledge the presentation to the Society by the late President, Sir J. H. Lefroy, of ten Rain Gauges, for the purpose of instituting a systematic enquiry into the local distribution of rain in Tasmania,—an act of thoughtful kindness and liberality which well deserves acknowledgment.

The movement, initiated at an evening meeting of the Society, for the improvement of the Queen's Domain, has received the sanction of the Government, who have placed a sum of money at the disposal of the Committee which has been formed for the purpose of carrying out the work.

COUNCIL.

A vacancy in the Council has occurred during the year, occasioned by the retirement of Mr. Francis Abbott, F.R.A.S., which has been filled up by the re-election of the Right Rev. Bishop Bromby. The list of retiring

Members has been posted in the Library for the last three days, agreeably to Rule 33.

FINANCE.

The income from all sources was as follows:—Government grant in aid to Museum, £200; ditto to Gardens, £600; annual subscriptions, £166; special donation from Sir J. H. Lefroy, £5; from Marine Board, £20; sale of plants, &c. at Gardens, £70 4*s.* 10*d.*, giving a total of £1061 4*s.* 10*d.* The expenditure amounted to £1046 4*s.* 4*d.*, thus leaving a balance to credit in the Commercial Bank of £15 0*s.* 6*d.* The outstanding liabilities will probably amount to not more than £20, against which must be placed £30 12*s.* in the hands of Mr. Abbott for weekly payment of wages at Gardens, and arrears of subscriptions estimated at £20.

GARDENS.

About 300 new plants have been added to the collection, many of which, when fully developed, will doubtless prove of an ornamental character. From Mons. J. Linden, of Ghent, was received a collection of Camellias and Azaleas, packed in an ordinary case, and sent in the hold of one of the Orient steamers. The plants arrived in excellent condition, the Camellias especially, not having lost a leaf. The experiment will prove of interest to persons introducing plants of this description. It may be worthy of note that the American Cranberry *(Vaccinium macrocarpon)*, introduced into the Gardens a few years ago, has increased sufficiently to fill a large tub, and is apparently thriving. This plant is valuable for cultivation on wet peat bogs, but suitable for little else. In Canada and the United States it is subjected to regular culture, and is a source of great profit. About ten thousand Norfolk Island Pines have been raised from seed received from Norfolk Island. This is worthy of record, as being the first batch raised from seed in the Colony. The plants will be valuable for effecting exchanges. In the propagating yards various alterations, necessitated by the decay of the old fencing, and additions have been made. A rough fern house has been erected, and also a large trellis work shelter for pot plants. Progress is being made with the new plant labels. About 1000 have been prepared, and several hundreds of the names printed ready for mounting. This work will be pushed on as expeditiously as possible. Thanks are due to the Directors of the Royal Gardens, Kew, London; the Botanic Gardens, Adelaide and Melbourne; Baron Von. Müeller; the Chamber of Agriculture, Washington, U.S.A.; Messrs. Low of London; Verschaffelt, and Linden, of Ghent, Belgium, and others, for their valuable donations and exchanges during the year; also to the owners and captains of vessels, who have on many occasions gratuitously carried cases of plants, &c. for the Gardens. The Government has rendered its usual assistance, as far as was in its power, in the supply of labour necessary for the performance of the rougher garden operations. The approximate number of visitors to the Gardens during the year was 51,914.

Museum.

As stated in the monthly reports of the meetings, many objects of interest have been added to the collection during the year. As deserving special notice may be mentioned a large number of mineral specimens received, through the Tasmanian Commissioners for the Melbourne Exhibition, from the Sandhurst School of Mines; a collection of named casts of fossils, &c. presented by Professor Ward, of Rochester, United States; a collection of bird skins from Singapore, the gift of His Excellency Sir F. A. Weld, K.C.M.G.; a collection of British birds' eggs, from Mr. W. R. Stephens; 2 carved masks, worn by the natives of New Ireland in their dances, from the Rev. George Brown; a specimen of that peculiar fish, the *Ceratodus Forsteri*, from the Burnett River, Queensland, from Mr. R. B. Sheridan, &c. The task of re-naming and cataloguing the collection of birds, comprising several hundred specimens, has been undertaken by Mr. E. D. Swan, who has made considerable progress with the work. The mounted specimens, also, are being thoroughly cleaned and re-arranged under Mr. Swan's supervision; and the best thanks of the Society are due to that gentleman for his unremitting attention to this important matter. A few specimens have been added to the conchological collection. Mr. Legrand has, as usual, attended to this part of the Museum, and has rendered assistance in various other ways during the year. The very limited amount of assistance available for Museum purposes renders it impossible to make much progress with the collection,—the services of a skilled Taxidermist and Articulator, for whom ample employment could be found, being greatly needed. Additional table cases are required for minerals and fossils; also book cases, or shelving, for the Library. The attendance of visitors to the Museum keeps up well, as will be seen by the following figures; viz.—On week-days, 9685; on Sundays, 5884,—making a total for the year of 15,569. It is only between the hours of half-past 2 and 5 in the afternoon of Sunday that the Museum is opened; and this arrangement, as will be seen by the number availing themselves of the opportunity, may be pronounced to be no longer an experiment, and to be fully justified by the quiet and orderly demeanour of the visitors.

STATEMENT of the Funds of the ROYAL SOCIETY OF TASMANIA *for the Year* 1881.

Receipts.	£	*s.*	*d.*	£	*s.*	*d.*
Annual Subscriptions from 79 Members	118	10	0			
Ditto, arrears from former years..	47	10	0			
Special donation from His Excellency Sir J. H. Lefroy	5	0	0			
From Marine Board for clerical assistance in completing the Light-house Meteorological Tables	20	0	0			
Total Royal Society........		..		191	0	0
Museum.						
Grant in aid from Treasury........		...		200	0	0
Botanic Gardens.						
Grant in aid from Treasury........	600	0	0			
Proceeds of sale of Plants, Fruit, Flowers, &c.	70	4	10			
				670	4	10

Expenditure.	£	*s.*	*d.*	£	*s.*	*d.*
Jan. 13—Balance overdrawn at Commercial Bank, as per statement for 1880..........................		..		63	6	7
June 30—Interest on overdrawn account		..		1	4	4
Royal Society.						
Meteorological Instruments........	2	4	9			
Printing and Advertising..........	26	13	6			
Postage, Parcels, &c.	3	4	9			
Collector's Commission	4	1	6			
Messenger	0	5	0			
Sundries	1	5	6			
Clerical assistance for Meteorological Tables	20	0	0			
Library Books, Stationery, Binding, &c.	46	4	3			
Total Royal Society........		..		103	19	3
Museum.						
Salary of Curator	125	0	0			
Wages of Attendant	52	0	0			
Ditto, for Sunday duty	13	0	0			
Insurance	4	15	8			
Purchase & preparation of Specimens, &c.	9	13	0			
Water Rate......................	5	13	4			
Sweeping Chimneys	0	10	6			
Fuel and Light	3	16	0			
Sundries and Petty Cash	2	7	2			
Ironmongery, Brushware, &c......	4	19	5			
Freight and carriage of Specimens..	1	15	6			
Fittings, Repairs, &c.	8	17	0			
Total Museum		..		232	7	7

			£1061 4 10

NOTE.

Dr.

To outstanding accounts, Printing, Binding, &c., estimated at		..	20 0 0

Cr.

By cash in hands of Mr. Abbott for weekly payment of Wages at Gardens	30 12 0		
Balance at Bank	15 0 6		
			45 12 6
Balance to Credit		..	£25 12 6

Gardens.

Salary of Superintendent	200 0 0		
Wages of Labourers	304 6 8		
Tools and repair of ditto	8 3 0		
Freight and carriage of Plants	11 4 3		
Stationery and Stamps	3 19 2		
Forage	7 3 2		
Horse Hire	5 12 0		
Ironmongery, Brushware, &c.	30 11 4		
Timber, and repair of Buildings	11 19 0		
Seeds, &c.	8 18 3		
Sundries	30 0 9		
Water Rate	2 7 6		
Flower Pots	15 10 0		
Fuel	2 4 0		
Ploughing	3 7 6		
Total Gardens		..	645 6 7
1882. Jan. 13—Balance to credit in Commercial Bank		..	15 0 6
			£1061 4 10

Audited and found correct.

FRANCIS BUTLER.
JOHN MACFARLANE.

26th *January*, 1882.

STATEMENT of the MORTON ALLPORT *Memorial Fund,* 1881.

1881.	Dr.	£	s.	d.	1881.	Cr.	£	s.	d.
Jan. 1.	To balance as per Statement for 1880...	11	0	0	Feb. 1.	By Pass Book..............................	0	0	6
31.	Interest..	0	3	3	Dec. 31.	Balance to credit of Fund	21	10	9
Feb. 28.	Interest..	0	0	10					
May 9.	Cash from A. G. Webster, Esq.	10	0	0					
Aug. 31.	Interest..	0	7	2					
		£21	11	3			£21	11	3

Examined and found correct.

FRANCIS BUTLER.
JOHN MACFARLANE.

26th January, 1882.

BOOKS and Periodicals purchased and presented during 1881.

[Presentations marked thus *.]

Agricultural Gazette, The, current numbers.
* Anthropology, Index to Papers on. From Anthropological Society, London.
Arts, Journal of Society of, current numbers.
Athenæum, The, ditto.
* Adelaide University Calendar, 1881.
* Astronomy.—"The Gem Cluster in Argo." "On a new method of printing Star Maps." "On the Longitude of Sydney Observatory." "On some new Double Stars and Binaries." "Recent changes on the surface of Jupiter." "Astronomical Results for 1877-8, Sydney. By H. C. Russell, Esq., B.A., Sydney." From the Author.
* Academy, American, of Arts and Sciences, Proceedings of, 1877 to 1880. From the Academy.
* ———, Connecticut, of Arts and Sciences, Transactions, vol. 3, part 2, vol. 4, part 1. From the Academy.
* Association, American, for advancement of Science, Proceedings, vols. 26 and 27, 1877-8. From the Association.
* ———, Historical and Archæological of Ireland, Journal of, vol. 5, Nos. 39 to 41. From Dr. Agnew.

* Botanical Enterprise of the Empire, The. By F. Thiselton Dyer, M.A., B.Sci., F.Z.S., F.R.S. From the Author.
* ——— Gardens, St. Petersburg. Report, tome 7. From the Director.

* Catalogue of New Zealand Court, Melbourne Exhibition, 1880. From the Commissioners.
* ——— Bibliotheca Schimperiana, 1881. From the Author.
Catalogues, British Museum. Coleopter, part 1, 1879. Lepidoptera, parts 3, 4, 5. Birds, part 5.
——— of Library of Royal Colonial Institute, London, 1881.
* Comet 1, on Orbit elements of, by J. Tebbutt, F.R.A.S. From the Author.
* Coast Survey, United States, Report of, 1877. From United States Government.

* Entomologisk tidskrift, Band 1, 1880; Heft 1 and 2, 1880. By Jacob Spanberg. From the Author.
* Expedition, Norwegian North Polar, 1878, Chemistry of, by B. H. Tornoe; Zoology of, by Robert Collet. From Government of Norway.
* Essex Institute, Salem, U.S. America; Bulletin of, vols. 10, 11; Historical Collections, vols. 14, 15, 16. From the Institute.
* Engineers and Shipbuilders in Scotland, Institution of, Transactions of, vol. 23, 1879-80. From the Institution.

Florist and Pomologist, The, current numbers.

Fishes, the Study of, by Dr. Günther.
* Flora of British India, by Sir J. D. Hooker, part 8. From the India Office.
* Fern World, The, by F. M. Bailey, F.L.S. From the Author.

Gardener's Chronicle, The, current numbers.
Geological Magazine, The, ditto.
* Geological and Geographical Survey of the Territories, United States, publications of, vols. 2, 3, 4, 5, 6, bound 4to. Bulletin, vol. 4, Nos. 2, 3, 4; vol. 5, No. 1; vol. 6, No. 1. Survey of Colerado, 1876, Idaho, 1877. Report of Entomological Commission, 1877. Bibliography of North American Invertebrate Palæontology. Catalogue of Publications. Report, vol. 12. From the United States Government, per F. V. Hayden, U.S. Geologist.
* Geology of Wisconsin, 1 vol. and Maps. From T. C. Chamberlin, Chief Geologist.
* Geological Survey of India, Memoirs of, vol. 15, part 2; vol. 17, parts 1 and 2. Palæontologia Indica, Series 14, vol. 1, part 1. Series 13, parts 1 and 2; Series 10, vol. 1, parts 4 and 5. Records of Survey, vol. 12, part 4, 1879; vol. 13, parts 1 and 2, 1880.
* Geology and Mineralogy, vols. 1 and 2 (Bridgewater Treatise), by the Rev. William Buckland, D.D., 1837. From H. J. Buckland, Esq.
* Geologische Montanistisch Historische Monographie, by Dr. E. Rayer, Berlin. From the Author.
* Geologique, Internationale Congres de, Report, 1881. From T. Stephens, Esq.

* Institute, New Zealand, Proceedings of, vol. 13, 1880. From Dr. Hector, C.M.G., F.R.S.
* ———, Essex, Salem, Mass., U.S.A., Bulletin, vols. 10, 11. Historical Collections, vols. 14, 15, 16. From the Institute.
* ———, Canadian, Proceedings, vol. 1, part 1. From the Institute.
* ———, Royal Colonial, Proceedings, vol. 11, 1879-80. From the Institute.
* Imports and Exports, Special, by J. K. Cross, M.P. From the Cobden Club.

* Lincei, R. Accademia dei, Transunti, vol. 5., fasc. 1-14, 1881.
* Longitude of Sydney Observatory, 1880, by J. Tebbutt, F.R.A.S.

Magazine, Country Gentleman's, The, current numbers.
* Meteorology, Rate of Barometer changes in British Isles, 1880, by G. M. Whipple. From Meteorological Office, London.
* Meteorology, Report of Kew Committee, 1880. From Meteorological Office, London.
* ———, Report of International Committee Meeting at Berne, 1880. From Meteorological Office, London.
* ———, Report on New Zealand, 1880. From Dr. Hector, C.M.G., F.R.S.
* ———, Note on a Scale for correcting Barometer readings, by H. C. Russell, B.A.

* Meteorology, Results of Observations in New South Wales in 1876-7-8-9. Results of Rain and River Observations in N.S. Wales, 1880. Thunder and Hail Storms in N. S. Wales, 1880, by H. C. Russell, B.A. From the Author.

* ——————, Indian, for 1880, and January 7, February and March, 1881. Memoirs of ditto, vol. 1, part 5, 1881. From the Government of India.

* ——————, Washington Weather Reports, daily, November and December, 1874, January, 1875, January to May, 1877. Report for 1879. Weather Review, May, 1881. From Government of America.

* Meteorological and Magnetical Observations, Bombay, 1871 to 1878.

* —————— Observations, Calcutta, July, 1880. From Government of India.

* —————— and Magnetic Observations in North America, by Sir J. H. Lefroy. From the Author.

* Mollusca, Recent, found at Port Jackson, by J. Brazier, C.M.Z.S., &c. From the Author.

——————, Iles Australiennes, Localités des, des Iles Salomon, et d'autres Iles de la Mer Sud. From the same.

* Mining in California, Report on, by G. Thureau, F.G.S. From the Author.

* Museum, United States National, Catalogue of, 1879.

Nature, current numbers.

* Naturhistorischen vereins, Verhandlunges des, 1879-80.

* Naturwissenschaftlichen vereins, Verhandlungen des, 1880.

* Newspaper, File of a Ms., the first published at Waratah, Mount Bischoff. From His Excellency Sir J. H. Lefroy.

* Observatory, United States Naval, Washington—Observations, 1869 to 1871. Appendix 1870, 1872, 1874, 1876. Tables of Transit Observations, 1872. Catalogue of Stars. Researches on Motion of the Moon. The "Lick," Report of Observations on Mount Hamilton, 1880.

* Plants, The, of North-western Australia, by Baron F. Von Müeller, K.C.M.G., M.D., F.R.S.

* Report of Colonial Museum, Wellington, New Zealand, 1880. From Dr. Hector.

* —————— Launceston Mechanics' Institute, 1880.

* —————— Mining Surveyors, Victoria.

* —————— Auckland Institute Museum.

* —————— Director of Botanic Gardens, Adelaide.

* Reliquiæ Diluvianæ (Organic Remains), by the Rev. W. Buckland, D.D., 1823. From H. J. Buckland, Esq.

* Rainfall, British, 1879, by G. J. Symons. From Sir J. H. Lefroy, K.C.M.G.

* Reciprocity Craze, The, by G.W. Medley. From the Cobden Club.

* ——————, The French Treaty and, by Joseph Chamberlain, M.P. From the Cobden Club.

* Science Record, The Southern, current numbers. From the Publisher, Melbourne.

* Statistics of Victoria, 1879.
* ——— New Zealand, 1879.
* ——— Tasmania, 1880.
* Society, Asiatic, of Japan, Transactions of, vol. 8, parts 3 and 4; vol. 9, parts 1 and 2. From the Society.
* ———, Royal, Journal of, vol. 11, part 3; vol. 12, parts 1, 2, 3; vol. 13, part 1. From the Society.
* ———, Royal Microscopical, Journal of, vol. 3, parts 6 and 6A; Series 2, vol. 1, parts 1 to 5 inclusive. From the Society.
——— ——— Astronomical, Monthly Notices, vol. 41, Nos. 1 to 9, 1881. Memoirs, vol. 41, 1879; vol. 45, 1880. From the Society.
* ——— ——— of Victoria, Transactions, vol. 17, 1880. From Society.
* ——— ——— of South Australia, Proceedings, vol. 3, 1879-80. From Society.
* ——— ——— London, Proceedings, vols. 31, 32, parts 206 to 213 inclusive. From the Society.
* ———, Meteorological, Quarterly Journal of, current parts. From Society.
* ———, Linnean, of New South Wales, Proceedings of, vol. 5, parts 3, 4; vol. 6, parts 1 & 2. From Society.
* ———, Acclimatisation of Canterbury, New Zealand, Report, 1880.
* ———, Malacological of Belgium, Annals of, 1881. Proces verbaux, tome 8, 9, 1879-80.
* ——— Royal of New South Wales, Proceedings, vol 4, 1880.
* ——— ——— Historical, Transactions, vol. 9, 1881. From Society.
* ——— ——— Geographical, Proceedings, parts 2 to 12, 1880; 1 to 3, 1881. Journal of, vol. 49, 1879.
* ———, Geological of London, Quarterly Journal of, vol. 26, Nos. 141 to 144; vol. 27, No. 145. List of Fellows, 1880. From the Society.
* ———, Zoological, London, Proceedings of, part 4, 1879; parts 1, 2, 3, 1880, &c. From Society.
* ———, Linnean, Journal of, vol. 17, Nos. 103 to 105; vol. 18, Nos. 106 to 110 (Botany); vol. 15, Nos. 81 to 84 (Zoology).
* ———, Statistical, Journal of, vol. 43, No. 4. From Society.
* ———, Malacological of Belgium, Annals, vols. 9 to 11, 1874-1876. From the Society.
* ———, Leeds Literary and Philosophical, Report of, 1880-1.
* Skies, The Southern, a Lecture delivered by His Excellency Sir John Henry Lefroy, K.C.M.G. From the Author.

* Tree culture in South Australia, Treatise on, by J. E. Brown, F.L.S. From the Author.
* Ditto, Duplicate copy, presented by the Trustees of the Public Library, Hobart.
* Trigonometrical Survey of India, Account of, vols. 2 to 5, 1879-81. From the Secretary of State for India.

* Uranus and Jupiter, Note on Opposition of, 1880, by John Trebbutt, F.R.A.S. From the Author.

* Zoology, Museum of Comparative, Harvard College, Cambridge, U.S.A., Bulletin of, vol. 4; vol. 5, Nos. 2 to 10; vol. 6, Nos. 8 to 11. Memoirs of, vol. 5. part 2; vol. 6, No. 1, parts 1 and 2; vol. 7, No. 2, part 1. From the Museum.

* ——— of Norwegian North Atlantic Expedition, part 3, 1881. From Norwegian Government.

LIST of Donors to the Museum during 1881.

[For particulars of Donations see Lists in Monthly Proceedings.]

Aikenhead, W., Esq.
Boon, Captain.
Brown, Rev. George.
Barnard, J., Esq.
Burgess, W. H., Esq., M.H.A.
Brown, Justin M'C., Esq.
Bromfield, T. H., Esq.
Chick, Mr. R.
Conrad, Mr.
Carson, Mr.
Dyer, Mr. R. B.
Drew, Rev. H.
Doodie, Mr.
Exton, Mr.
Exhibition (Melbourne) Commissioners for Tasmania.
Finlayson, Mr.
Fitzgerald, Mr. O.
Glover, C. H.
Gellibrand, Hon. W. A. B.
Gifford, Mrs.
Gawne, E. B., Esq.
Henry, R., Esq.
Ives, Mr., barque *Ethel.*
Johnston, R. M., Esq.
Johnston, J. W., Mr.
Jackson, A., Mr.
Lefroy, His Excellency Sir John H., K.C.M.G., C.B.
Lipscombe, E., Mr.
Lamb, H., Esq., M.H.A.
Lodder, Mrs.
Lewald, D., Mr.
Moore, J., Mr.
Murray, Mrs. W.
Macfarlane, Dr.
Murray, W., Esq.
M'Donald, J., Mr.
Nairn, C. C., Esq.
Pulleine, Master
Rayner, Mr.
Rapp, Captain.
Stephens, W. R., Esq.
Swan, E. D., Esq.
Simpson, J., Esq.
Stewart, Master.
Sheridan, R. B., Esq.
Stephens, T., Esq., M.A.
Tarleton, W., Esq.
Terry, Mr.
Taylor, A. J., Mr.
Wright, Mr.
Weld, His Excellency Sir F.A. (Singapore.)
Wintle, S. H., Esq.
Wilkins, Mr. A.
Ward, Prof. H.A. (Rochester, New York).
Watchorn, Master B.
Weston, Maurice, Esq.

EXCHANGES OF PLANTS AND SEEDS DURING THE YEAR 1881.

From Messrs. J. Vietch & Co., London—1 case Pelargoniums.

From Dr. J. H. King, Superintendent Botanic Gardens, Howrah, Calcutta—20 packets seeds.

From Director of the Royal Gardens, Kew, near London—Seeds of new variety Cedar, cuttings Willows.

From Baron Ferd. Von Müeller, Government Botanist, Melbourne—Numerous sendings of seeds, bulbs, &c.

From Chamber Agriculture, Washington, United States—Numerous packets seeds.

From Mr. J. Latham, Liverpool-street, Hobart—Imported seeds and bulbs.

From Mr. C. F. Creswell, Melbourne—Seeds and bulbs.

From Mr. J. Sangwell, Melbourne—Case containing 48 ferns.

From Mr. Wm. Bull, King's Road, London—30 packets seeds.

From Mr. J. F. Duthie, Superintendent Botanic Gardens, Saharunpur, North West Province, India—7 packets seeds.

From Mr. J. Smith, Nurseryman, Riddel's Creek, Victoria—45 fruit trees.

From Horticultural Society's Gardens, Melbourne, Victoria—Collection new fruit scions.

From Rev. R. H. Codrington, Norfolk Island—Seeds N.I. pine.

From Mr. J. B. Mather—Plant Anthocercis Tasmanicum.

From Mr. W. R. Guilfoyle, Director Botanic Gardens, Melbourne—Numerous plants and seeds.

From Mr. G. Brunning, Nurseryman, near Melbourne—40 rose plants.

From Miss Solly, Hobart—5 packets seeds.

From Messrs. Shepherd & Co., Nurserymen, Sydney—case plants.

From Captain Fisher, Hobart—12 New Zealand ferns.

From Monseiur J. Verschaffelt, Ghent, Belgium—Case Rhododendrons.

From Mr. S. Purchase, Nurseryman, Sydney—Case Norfolk Island pines.

From Messrs. Hugh Low, Nurserymen, London—case plants.

From Dr. R. Schomburgk, Director Botanic Gardens, Adelaide—case plants.

From Monsieur J. Linden, Ghent, Belgium—Case camellia and azalea.

To Hugh Low & Co., London—Plants araucaria and tree ferns.

To Monsieur J. Verschaffelt, Ghent, Belgium—6 tree ferns.

To Dr. Schomburgk, Botanical Gardens, Adelaide—Seeds and sphagnum moss.

To the Botanical Gardens, Melbourne—Seeds, plants, and moss.

To the Royal Gardens, Kew, London—Seeds eucalypti.

To Messrs. Vilmorin, Andrieux, Paris—Seeds.

To Baron Ferd. Von. Müeller—Seeds, various.

To Mesrs. Veitch & Sons, London—6 tree ferns.

To the Botanic Gardens, Sydney—Sphagnum moss.

To Monsieur J. Bourdil, Paris—Seeds, hardy eucalypti.
To Sir A. Stepney, South Wales—Seeds, hardy eucalypti.
To Mr. J. Smith, Melbourne—Seeds, plants, and sphagnum moss.
To Mr. G. Brunning, Melbourne—Plants, seeds, and moss.
To Messrs. Shepherd & Co., Sydney—Plants and seeds.
To Mr. C. F. Creswell, Melbourne—Plants and seeds.
To the Horticultural Society, Melbourne—Plants and bulbs.
To the Commander H.I.J.M.S. Riujio—75 packets seeds.
To Mr. S. Purchase, Sydney—Bulbs and seeds.
To Mr. J. Sangwell, Melbourne—Plants and seeds.
To Messrs. Ch. Huber Cie., Paris—Seeds, eucalypti.
To Mr. E. B. Heyne, Adelaide—Seeds and bulbs.

F. ABBOTT, *Superintendent.*

PLANTS INTRODUCED INTO THE ROYAL SOCIETY'S GARDENS DURING 1881.

Acacia concinna
Actinomeris squarrosa
Adiantum amabile
    ,, Ghiesbrachtii
    ,, Henslowianum
    ,, nobile
    ,, scutum
    ,, tinctum
    ,, villosum
    ,, Williamsi
Albizzia Saman
Aleurites Mexicana
Allomanda violacea
Amaryllis blanda
Ampellopsis indivisa
Amphicarpum Purshii
Anenome cylindrica
Ansonia tabernemontana
Aphelandra fascinata
Aralia edulis
Araucaria elegans
Asclepias cornuti
Ascyrium, stans
Aspidium Sieboldii
Asplenium Sieboldii
Asplenium Goringianum
    ,, diversicolor
    ,, Yeylanicum
Aster oblongifolia
    ,, puniceus
    ,, viminea
Berberis Fremonti
Blechnum Braziliense
    ,, lævigatum
Bracteolaria racemosa
Brunsvigia Guilfoylei
Calodendron capense
Cheilanthes tomentosa
Chrysopus mariana
Cimicifuga racemosa
Clematis coccinea
Cornus capitata
    ,, florida
    ,, sericea
Cotoneaster affinis
Crinum uniflorum
    ,, mauritanicum
Cyathea Boylei
    ,, princeps
Dahlia Maximillana
Davallia canariense
Desmodium acanthifolium
Dioscorea villosa
Dipladenia Boliviensis
Diplazium Shepherdi
Doris scandens

Doryopteris nobilis
Eranthemum roseum
Eriocaulon decangulare
Eryngium Yuccæfolia
Erythrina caffra
Eucalyptus acmenioides
,, botryoides
,, cineria
,, diversicolor
,, dumosa
,, eugenoides
,, hæmastoma
,, incrassata
,, leucoxylon (white)
,, leucoxylon (red)
,, marginata
,, occidentalis
,, patens
,, plattypus
" rudis
Eugenia eucalyptoides
Ficus macrophylla alba
Flamingia semialata
Goldfussia calyptrata
Goniopteris pennigera
Gymnogramma Pearcei
Hebenaria tridentata
Hedera arborea aurea
Hodginsonia ovalifolia
Hovenia dulcis
Hypolepis Dicksonioides
,, millifolium
Ilex, Golden Queen
,, Madariensis
,, Shepherdi
Iris versicolor
Ixia grandiflora
,, secunda patens
Jacaranda alba
Juniperus japonica aurea
Lastrea felix-mas recurva
Lepachis pinnata
Lespedeza violacea
Leucadendron glabrum
Lixtris pycnostachya
,, scariosa
Ligustrum tricolor
Littonia modesta
Lomaria diversicolor bipinnatisecta
Lomaria Fraseri
,, Gibbosa
Lycopodium glabellatum
Melaleuca armillaris
,, laterita
Mikania Guaco
Myrica Californica
,, rubra
Myrsine bifaria
,, chatamica
Nephelium leucocarpum
Nephroduim glabellum
,, melanocaulon
,, molly corymbiferum
,, palmatum
Nephrolepis davallioides
Nerium alba pleno
Nothochlæna cyrysophila
,, nivea
Osmorrhiza trivistylis
Pentstemom digitale
Petalostemon candidum
Phaseolus helvelus
Picea nobilis
Pilea grandis
Plattyloma atropurpurea
Polypodium pennigerum
,, vacillans
Pothos aurea
Pteris geranifolia
,, hastata
,, longifolia
,, longifolia cristata
,, mucilenta
,, scaberula
,, semi-pinnata
,, serrulata Applebyana
Quercus elegantissima
,, new variegated evergreen
Randia Chartana
Rhamnus lanceolatus
Rhodoleia Championi
Rosa blanda
,, gymnocarpa
Selaginella sitrosa
Senecio pulchra
Sideroxylon argenteum
Silphium perfoliatum
Solidago canadensis
,, nemoralis
,, serotina
Sterculea Bidwilli
,, quadrifida
Sterocarya stenoptera
Strophanthus capensis
Tetranthera ferruginea

Torenia Bailloni
,, Tourneri
Tristrania laurina
,, nerifolia
Tupidanthus calyptratus
Ulmus amplexicaulis
Vernonia fasciculata
Vernonia nova-borensis
Viburnum cotinifolius
,, oxycoccus
Wistaria Bidwilli
,, Megasperma
Woodwardia orientalis
,, radicans

Camellia.

Alessandro Rossi
Alfredo Capellini
Angelo Cocchi
Archduchesse Marie
Auguste Delfosse
Carlotta Petroso
Chats
Clodia
Corrodino
Contessa Tozzoni
,, Ramphi
Don Carlos Ferdinando
Don Pedro the Fifth
Elvini Delli
Elvira Bianchini
Giardino Giaberti
,, Santarelli
Il Cygne
Italia unita
Jardin d'Hiver
Jubile
Madame Ambroise Verschaffelt
,, Cachet
,, Rudolph Abel
Marie Morren
Ornatissima
Planipetala
Poldina Vanturi
Prima Donna
Principessa Clothilde
Solfaterre
Souvenir d'Emile Defresne
Venus de Medicis

Azalea.

Ami Gustave Guilmot
Charmer
Chloris nova
Comte Charles de Kerchove de Denterghem
Comte de Flander
Dr. Moore
Duc Adolph de Nassau
Eugene Mezel
Frau Johanna Winkler
Furstin Bariatinski
Iveryana
John Gould Veitch
James Veitch
Koniger Cleopotra
La Gloire
Madame de Ghellinck
,, Mendel
,, Van der Cruyssen
,, Van Eeckhaute
Mammoth
Raphael
Reine des Pays Bas
Roi de Holland
Souvenir de Prince Albert

Rose.

Abel Grand
Baron Chauraud
,, Noirmont
Climbing Charles Lefebvre
,, Jules Margottin
Comte Raimbaud
Countesse Rosebery
John Bright
Lord Clyde
Madam C. Kuster
Madam Morren
Marquis Mortmart
Maurice Bernardin
Pet
Red Dragon
Richard Laxton
Souvenir de Spa
,, de Monsieur Boll
T. C. Cole

Caladium.

Agrippana
Alfred Blue
Duchardi
Duc de Cleveland
Harold
Herbyanum
Mayerbeer
Proserpine
Uranus

Pelargonium.

Corsair
Diadem
Faust
Fortitude
Jeanette
Madame Thibaut
Maid of Kent
Marie Lemoine
Mermeris

Apple.

Baxter Pearmain
Bromley Seedling
Cogswell
Early Almond
Foxley
Green New Town Pippin
Grey Leadington
Lady Hanniker
Minier's Dumpling
New French Hawthornden
Peasgood's Nonsuch
Pennock
Peter the Great
Prince Bismark
Reinette Jaune Musque
Stamford Pippin
Striped Beaufin
Twenty-ounce
Winesops
Wyken Pippin

Pear.

Brockwith Park
Claps' Favourite
Enfant Prodique
Hyshe's Prince Consort
Madame Millet
,, Treyne
Suffolk Thorn

Plums.

Brahey's Green Gage
Denbeigh
Dove Bank
Fellemberg
Guthrie's Late Green
Leigel's Apricot
Prince Engelbert
Washington

Cherry.

Ashton
Belle de Choisy
Biggerreau de Holland
Early Lyons
Early Purple Guigne
St. Margaret

Gooseberries.

Antagonist
Chesshire Lass
Clayton
Companion
Green Overall
Lady Leicester
Leveller
Ploughboy
Queen of Trumps
Shiner
Slaughterman
Snowball
Speedwell

F. ABBOTT, *Superintendent.*

WILLIAM THOMAS STRUTT,
GOVERNMENT PRINTER, TASMANIA.